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Hammerstone Road Depot, Manchester

Discharge of Planning Condition 11

Curtins Ref: HRD-CUR-00-XX-T-RE-006

Revision: P01

Issue Date: 02 February 2025

Client Name: Morgan Sindall

Client Address: 10th Floor, Evershot St, London, NW1 2DN

Site Address: Hammerstone Road Depot Gorton Manchester M18 8EQ

Control Sheet

Rev	Description	Checked	Issued	Date
P01	First Issue	ATL	ATL	02/02/25

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1.0 Introduction

1.1 Project Details

1.1.1 Curtins was appointed by Morgan Sindall to assist in the discharge of planning conditions for Hammerstone Road Depot, Manchester, M18 8EQ, National Grid Reference 388216E, 396834N.

1.1.2 Planning Consent was granted 3rd December 2021 – the Planning Reference is 130127/VO/2021.

1.1.3 This report is provided in relation to the requirements of Condition 11:

11) Notwithstanding the drainage information referenced in condition no.1, prior to any above ground works in relation to the proposed new buildings, and the reconfiguration of the parking and servicing areas shall take place until surface water drainage works have been implemented in accordance with Non-Statutory Technical Standards for Sustainable Drainage Systems (March 2015) or any subsequent replacements national standards and details that have been submitted to and approved in writing by the Local Planning Authority. The development shall be implemented in accordance with the approved details.

Reason - To promote sustainable development, secure proper drainage and to manage the risk of flooding and pollution. This condition is imposed in light of national policies within the NPPF and NPPG and policies EN08 and EN14 of the Manchester Core Strategy (2012).

1.1.4 The main purpose of this report is to provide responses to comments received from the Lead local Flood Authority regarding previously issued information.

2.0 Responses to LLFA Comments

2.1 General comments:

2.1.1 *Please can the applicant provide a proposed levels plan. (Navigating the site without levels is difficult to follow.)*

Proposed Levels Plan is enclosed within Appendix A

2.1.2 *Area 5, MCC Bin store, north of the site. Clarity on Roof Access Stairs construction. Provide Foundation plans. (A potential clash between stair structure and culvert structure).*

The design of the stair access is addressed in the report for Condition 33. The report and confirmation of the Condition Discharge is included in Appendix B

2.1.3 *Please note the LLFA do not approve any build overs on culverted watercourses and applicants must maintain appropriate easements.*

Please refer to the report and confirmation of the Condition Discharge is included in Appendix B. The vehicle cleaning ramp is demountable and therefore does not restrict access to the culvert.

2.1.4 *Demolition Plan to be provided.*

Updated demolition Information is provided in Appendix C

2.1.5 *Kindly supply the CCTV documentation, as it has not been included in this application.*

The CCTV survey information is enclosed within Appendix D

2.2 Proposed Ground Floor Drainage.

2.2.1 *MCC LLFA previously advised against siphonic drainage. "We would not permit the use of siphonic in this instance, as this would likely increase the outfall discharge rate from the existing building to the watercourse." Please refer to LLFA response from Oliver Timmins 05 Aug 2021. Please clarify why this option as has been progressed?*

The existing building drainage is served by an extremely large number of rainwater pipes. These rainwater pipes discharge to several different sewers, both inside and outside of the site. It would have not been feasible to provide new gravity drainage for the building and route the surface water drainage to the watercourse.

The use of siphonic drainage allows for a new connection into the watercourse. As shown on the drainage information, the flow into the watercourse is restricted.

2.2.2 *Catchment plans - Errors have been identified regarding hatches and labelling in relation to the provided legend. Please review and update.*

Updated Catchment Plans are enclosed within Appendix A

2.2.3 *Could you please elaborate on the methodology of 33 l/s discharge rate for MH S28?*

The overall discharge for the external works for the site was calculated as the following:

- 1 in 1 year storm: 45 l/s
- 1:30-year storm: 107 l/s
- 1:100-year (+40%CC): 140 l/s

These discharge rates have been calculated using a combination of brownfield and greenfield runoff rates.

The lower ground car park drainage is limited to a discharge of 7 l/s (across all storm events, as agreed with UU)

The washdown drainage is limited to a discharge of 5 l/s (across all storm events, as agreed with UU).

The discharge rates for the main ground floor external drainage have been calculated by subtracting the discharge rates for the lower ground/ washdown areas from the overall drainage allowance:

- 1 in 1 year storm: 45 l/s (48% reduction from existing discharge)
- 1:30-year storm: 107 l/s (48% reduction from existing discharge)
- 1:100-year (+40%CC): 140 l/s (49% reduction from existing discharge)

2.2.4 *We require a sectional view from SRH04 to Tank 4. The LLFA must ensure that there are no clashes or conflicts.*

Section View enclosed in Appendix E – refer to drawing HRD-CUR-XX-00-DR-C-92-540

2.2.5 *The drawing mentions 'rising main by others' and 'RWH by others.' Where can we find this information? Without it, we lack a complete understanding of the system.*

The RWH tank is used to provide water for the vehicle washdown area. Details of the Rainwater harvesting tanks are available in Appendix E

2.2.6 *Once again, "Siphons Break at chambers. Refer to Sapoflow Details" Where might we access this information?*

Sapoflow details are enclosed in Appendix F

2.2.7 *Please provide tank 4 construction details.*

Tank Details are enclosed within Appendix E

2.2.8 *Please provided Vented cover construction details.*

Vented Manhole detail enclosed in Appendix F – refer to drawing HRD-CUR-XX-ZZ-DR-C-92-520.

2.2.9 *Connection north of MH S16 is not hydraulically efficient, please review and update.*

The connection into MH S16 has been detailed in order to bring the pipework into the manhole square to the outlet pipe.

2.2.10 *What is the purpose of having three pipes at SRH06a? Is this configuration the most efficient? Please provide construction details of this MH. Additionally, please provide confirmed 150 dia vent pipe level.*

The triple pipe connection has been used in order to allow the connection into the attenuation tank – the maximum direct connection to the tank is 375mm diameter. Therefore, three pipes have been used in order to provide sufficient capacity from SRH06 into the tank. The triple pipe configuration has been incorporated in the drainage model

2.2.11 *Once more, why are there three pipes at S27 and S28? Is this arrangement the most efficient? Please provide construction details of this MH.*

The reasoning behind triple pipe provision is as per 2.2.10. This also allows for the connection into the Tank access unit channel, which allows inspection and cleaning through the tank.

Construction details of manholes SRH06 and S27 are shown on drawing HRD-CUR-XX-00-DR-C-92-508 in Appendix G

2.2.12 *Please provide manufacturer data sheets for proposed petrol interceptor and “SPEL Detail drawing”*

Spel Interceptor Details are enclosed in Appendix H

2.2.13 *Please provide Gatic channel construction details and manufacturer specification / data sheets.*

Gatic channel construction details drawing HRD-CUR-XX-ZZ-DR-C-92-521 and performance information are shown on drawing in Appendix I.

2.2.14 *The construction specifications for "Connections to culvert" lack clarity. The instruction, "Manholes to be constructed in accordance with typical PCC manhole details shown elsewhere," is insufficient. Please provide comprehensive details, including adherence to BS codes, mortar haunching specifications, kite marking, concrete grade, minimum clear access requirements, and site-specific, special manhole details for the two connections into the watercourse: MH S29 and MH SRH08. Ensure that the provided details are scaled correctly and tailored to the site's requirements.*

Refer to drawing HRD-CUR-XX-ZZ-DR-C-92-528 in Appendix G, which contains details for the watercourse connection manholes.

2.2.15 *A correspondence from Oliver Timmins 09/03/2021 mentions: "If retaining wall structures are to remain on site and if the culverted watercourse is found to be directly beneath this, then it is the landowners responsibility as a riparian owner to ensure that the structural integrity of the culverted watercourse is not compromised by the proposed on site works." No details regarding retaining wall have been provided. Clarity required on any structural implications to the culvert. What happened to the retaining wall?*

This referenced the retaining wall along the southern boundary of the lower ground car park. This work has been completed without causing damage to the culvert. As there are no further works to be undertaken in this area, this is not now considered an issue.

2.2.16 *Kindly supply the CCTV documentation, as it has not been included in this application.*

The CCTV survey information is enclosed within Appendix D

2.2.17 *Method statement for connection to watercourse not provided.*

Method Statement and Risk Assessment is enclosed in Appendix G.

2.2.18 *Hydraulic calcs. Pending review due to clarification on the above points.*

Proposed Drainage Calculations are enclosed in Appendix J

2.3 Washdown Drainage

2.3.1 *Please kindly confirm if you've addressed the requirement for sufficient sediment control in the design to prevent silt from entering the public sewer?*

There are four elements of sediment control within the washdown drainage network:

- The in-situ concrete channels have silt traps at the outlet points to collect heavy sediment from the washdown runoff. (Details of the channels are shown on drawing HRD-CUR-XX-00-DR-C-94-700 in Appendix I)
- The connections from the channels connect into a catchpit chamber, which provides further sediment collection.
- The runoff then passes through a Washdown separator, sized for the estimated number of vehicles. This provides 7,500 litres of silt storage capacity.
- The runoff passes through another catchpit, and on to the Hydrobrake manhole. This manhole also contains a sump to allow for sediment. The effect of the flow control reducing the outflow, will allow for sediment to settle in the separator/ sumps provided.

2.3.2 *Supply information of enquiry to UU trade effluent team regarding any potential chemical discharge into the public sewer and determining the necessary treatment and licensing procedures.*

The Trade Effluent Consent is enclosed in Appendix K.

2.3.3 *Provide Sub-meter details*

Please refer to e-mail enclosed in Appendix K

2.3.4 *Please provide manufacturer data sheets / details for proposed silt-separator.*

The Separator details are enclosed in Appendix H

2.3.5 *Evidence of Klargester confirmation.*

An e-mail from the manufacturer (Spel), confirming the sizing of the separator ls are enclosed in Appendix H

2.3.6 *Please provide S106 approval in principle.*

S106 Part 1 Approval – Ref 02926533, and the Trade Effluent Consent are enclosed in Appendix K

2.3.7 *Regarding the correspondence from Oliver Timmins dated 17/08/2022, could you kindly confirm whether the ramp's impact or abnormal loading on the culvert has been thoroughly assessed and addressed? We seek clarity on whether this matter has been checked and resolved.*

The vehicles ramp will carry one vehicles at a time, and contains a number of supporting columns. As such, the loading on any individual column will be lower than the equivalent loading created by a single wheel load from the vehicle.

2.3.8 *Please confirm S106 south-east of the site is only for foul?*

Refer to S106 Part 1 Approval – Ref 02926533, in Appendix K

2.3.9 *Hydraulic calcs. Pending review due to clarification on the above points.*

Proposed Drainage Calculations are enclosed in Appendix J

2.4 Proposed Lower Floor Drainage

2.4.1 *No objections in principle, however S106 was issued 06/05/2022 and is only valid for 12 months. Has UU been re-consulted or has this been built out already?*

The Lower Ground Floor Drainage was completed in May 2024.

2.4.2 *Please provide tank 3 construction details.*

Construction Records for the Lower Ground Floor drainage, including Tank 3, are included in Appendix L

Appendices

Appendix A

Levels Plan

Catchment Plans

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KEY

- SITE BOUNDARY
- PHASE 1 WORKS BOUNDARY
- PHASE 2 WORKS BOUNDARY
- BOUNDARIES TAKEN FROM DRAWING HRD-FRA-00-XX-DR-A-90-0200
- 64.00 — MAJOR CONTOUR
- MINOR CONTOUR
- - 40.00 → INDICATIVE GRADIENT (ARROW POINTS DOWN)
- PROPOSED LINEAR DRAINAGE CHANNEL LOCATION
- PROPOSED KERB LOCATION
- RIIDGE LINE

NOTES

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT DRAWINGS AND SPECIFICATIONS.
2. DO NOT SCALE FROM THIS DRAWING. ANY AMBIGUITIES, OMISSIONS AND ERRORS ON THIS DRAWING SHALL BE BROUGHT TO THE ENGINEERS ATTENTION IMMEDIATELY. ALL DIMENSIONS MUST BE VERIFIED ON SITE.
3. ALL LEVELS ARE IN METRES ABOVE ORDINANCE DATUM UNLESS NOTED OTHERWISE.
4. ALL DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE.

PROPOSED LEVELS NOTES

1. ALL AMBIGUITIES, ERRORS OR OMISSIONS ON DRAWINGS SHALL BE BROUGHT TO THE ENGINEERS ATTENTION IMMEDIATELY.
2. THE ASSUMPTION HAS BEEN MADE THAT ALL MATERIAL BELOW SITE STRIP IS SUITABLE FOR RE-USE.
3. ALL KERBS ASSUMED TO HAVE 100MM UPSTAND EXCEPT FOR DROPPED KERBS AS NOTED:
   - 6mm UPSTAND FOR PEDESTRIAN CROSSINGS
   - 25mm UPSTAND FOR VEHICULAR CROSSINGS
4. THE CUT/FILL VOLUMES HAVE BEEN CALCULATED USING A COMPARISON BETWEEN THE FINISHED SITE STRIP LEVELS AND PROPOSED FINISHED LEVEL FORMATIONS.
5. THE TOPO HAS BEEN ASSUMED TO BE REPRESENTATIVE OF THE SITE UPON WORKS COMMENCEMENT OF EARTHWORKS OPERATIONS. CURTINS ACCEPT NO LIABILITY FOR VARIATION FROM THE PROVIDED TOPOGRAPHICAL SURVEY.

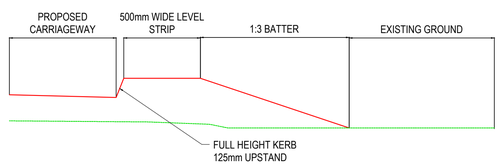
THIS DRAWING IS BASED ON:

PROPOSED SITE PLANS
- HRD-FRA-00-XX-DR-A-90-0200 REV C11 GA
- HRD-FRA-00-XX-DR-A-90-0207 REV C06 EXTERNAL WORKS SETTING OUT SHEET 1
- HRD-FRA-00-XX-DR-A-90-0208 REV C08 EXTERNAL WORKS SETTING OUT SHEET 2
- • HRD-FRA-00-XX-DR-A-90-0210 REV C10 EXTERNAL WORKS

TOPOGRAPHICAL & BUILDING SURVEYS
- S15724-1F-01 REV - BUILDING SURVEY
- S15724-GF-03 REV A BUILDING SURVEY
- S15724-T-01 REV - TOPO SURVEY

PHASE 2 SITE INVESTIGATION REPORT
068065-CUR-00-XX-RP-GE-002-V01

CBR RESULTS
785148.R01(00) - PLATE LOADING TEST REPORT



SECTION A-A
TYPICAL SECTION THROUGH TIE-IN TO COCA COLA BUILDING SLAB

Rev:	Description:	Date:	By:	Chkd:
C05	LEVELS UPDATED	22.10.24	KS	ATL
C04	UPDATED TO SUIT LATEST SITE LAYOUT	23.09.24	JC	ATL
P11	UPDATED IN LINE WITH COMMENTS/ UPDATED SITE LAYOUT	04.04.24	KS	ATL
P10	UPDATED FOR NEW TENDER	19/01/24	ATL	MW
C03	STAIR LEVELS AMENDED	15/03/23	ATL	MW
C02	LOWER GROUND CHANNEL LOCATIONS AMENDED	13/02/23	ATL	MW
C01	LEVELS AROUND WASHDOWN AMENDED	25/11/22	ATL	MW
P09	UPDATED IN LINE WITH COMMENTS	05/08/22	ATL	ATL
P08	UPDATED SITE LAYOUT	05/07/22	LK	MW
P07	REFUGE PARKING AREA LEVELS AMENDED	24/11/21	ATL	MW
P06	LOWER CAR PARK LEVELS AMENDED	05/08/21	ATL	MW
P05	DRAWING NUMBER CHANGE	15/04/21	ATL	ATL
P04	STAGE 4 UPDATE	13.04.21	ATL	MW
P03	STAGE 4 ISSUE	12.04.21	ATL	MW
P02	STAGE 3 UPDATE	16.11.20	ATL	MW
P01	STAGE 3 ISSUE	29.01.19	ATL	MW

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Status: STAGE 5

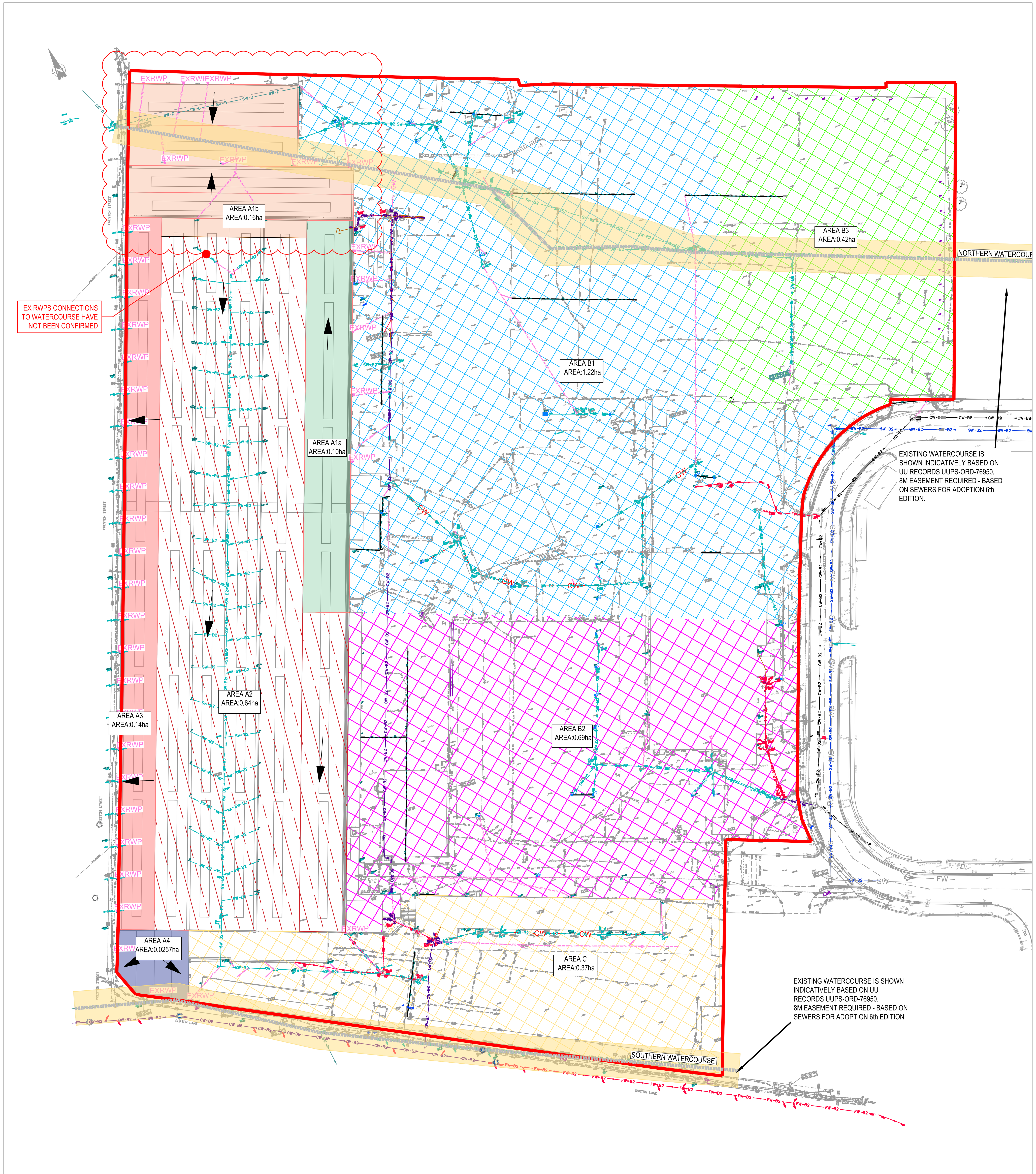
Project: HAMMERSTONE ROAD

Drg Title: PROPOSED EXTERNAL LEVELS

Size:	Date:	Drawn By:	Designed By:	Checked By:
A1	29.01.19	ATL	ATL	MW
Scale: 1:500				

Project No:	Originator:	Zone:	Level:	Type:	Discipline:	Category / Number:	Rev.
HRD	- CUR -	XX -	00 -	DR -	C -	91-602	-C05

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EXISTING FLOW: BASED ON THE MODIFIED RATIONAL METHOD

CATCHMENT	AREA (m^2)	FLOW RATE FOR THE 1 IN 1 YEAR EVENT (l/s)	FLOW RATE FOR THE 1 IN 30 YEAR EVENT (l/s)	FLOW RATE FOR THE 1 IN 100 YEAR EVENT (l/s)
A1(a&b)	2603	11	26	34
A2	6420	26	65	84
A3	1413	6	14	19
B1	12236	50	122	161
B2	6889	28	69	90
B3	4229	17	42	55
C	3749	15	37	49
TOTAL EXISTING: B1,B2,B3,C	27103	110	270	355
TOTAL PROPOSED: B1,B2,B3,C	26120	[50% REDUCTION IN DISCHARGE] 55	[50% REDUCTION IN DISCHARGE] 135	[50% REDUCTION IN DISCHARGE] 177

RAINFALL INTENSITY BASED ON MICRODRAINAGE RAINFALL DATA
1 IN 1: 11mm/hr
1 IN 30: 28mm/hr
1 IN 100: 36mm/hr

DRAWING IS BASED ON:
TOPOGRAPHICAL SURVEY BY SEP S15724-T
GPR SURVEY BY SEPT S17480-U JUNE 2018
EXISTING BUILDING SURVEY BY SEPT S15724-GA JUNE 2018
CCTV SURVEYS BY SEP DRAINAGE SURVEYS LTD:
- DEC 2018
- AUG 2020
- MAY, AUG 2021
- JAN 2022
- SEP, NOV 2023

UU RECORDS UUPS-ORD-76950.

GENERAL NOTES:

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTS AND ENGINEERS DRAWINGS AND SPECIFICATIONS.
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3. FOR GENERAL NOTES REFER TO DRAWING.

LEGEND

PROPOSED SITE BOUNDARY BASED ON 18021-FRA-ZZ-XX-DR-A-1003-P1
INDICATIVE LOCATION OF WATERCOURSE /PRIAVTE SURFACE WATER DRAINS BASED ON UU RECORDS.
EXISTING UNSURVEYED DRAINAGE ROUTE ASSUMED

EXISTING DRAINAGE BASED ON CCTV SURVEY DEC 2018
SW — SURFACE WATER PIPE (EXG)
CW — COMBINED WATER PIPE (EXG)

EXISTING SERVICES BASED ON GPR SURVEY S17480-U DEC 2018
FW-B2 — FOUL WATER PIPE
SW-B2 — SURFACE WATER PIPE

UNITED UTILITIES RECORDS UUPS-ORD-76950
ALL UU ASSETS ARE SHOWN INDICATIVELY
FW — UU FOUL WATER SEWER
SW — UU SURFACE WATER SEWER
CW — UU COMBINED WATER SEWER
WATERCOURSE

CATCHMENT
CATCHMENT A1a: EXISTING BUILDING ASSUMED SURFACE WATER DISCHARGE TO NORTHERN WATERCOURSE
CATCHMENT A1b: EXISTING BUILDING ASSUMED SURFACE WATER DISCHARGE TO NORTHERN WATERCOURSE
CATCHMENT A2 EXISTING BUILDING SURFACE WATER DISCHARGE TO PUBLIC COMBINE SEWER
CATCHMENT A3 EXISTING BUILDING ASSUMED DISCHARGE TO SOUTHERN WATERCOURSE
CATCHMENT B: GROUND FLOOR IMPERMEABLE AREA INCLUDING HARD-STANDING AND BUILDINGS
CATCHMENT C: LOWER LEVEL IMPERMEABLE AREA INCLUDING HARD-STANDING AND BUILDINGS
ASSUMED WHERE EXISTING ROOF DISCHARGE

Rev:	Description:	Date:	By:	Chkd:
P07	UPDATED FOR NEW TENDER	02.02.24	ATL	MW
C01	CONSTRUCTION ISSUE	23.09.22	ATL	MW
P06	UPDATED CATCHEMNTS	15.07.22	MW	MW
P05	UPDATED IN LINE WITH FURTHER CCTV INFORMATION	02/12/21	ATL	MW
P04	UPDATED FOR STAGE 4	17/08/21	MW	MW
P03	ISSUED FOR STAGE 4	05/08/21	MW	MW
P02	ISSUED FOR STAGE 3	18/11/20	MW	MW
P01	ISSUED FOR STAGE 3	29/01/19	MW	CG

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Status: STAGE 5

Project: HAMMERSTONE ROAD

Drg Title: EXISTING CATCHMENT PLAN

Project No:	Size:	Date:	Drawn By:	Designed By:	Checked By:
068065	A1	29/01/19	MW	MW	CG
	Scale: 1:500				

Project Code:	Originator:	Zone:	Level:	Type:	Discipline:	Category / Number:	Rev:
HDR	CUR	XX	00	DR	C	92-506	P07

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VIEWPORT A
SCALE 1:200

VIEWPORT B
SCALE 1:200

AREA 1

AREA 2

AREA 3

AREA 4

AREA 5

SRWP1

SRWP2

SRWP3

SRWP4

SRWP5

SIPHONS BREAK ON CHAMBER REFER TO SAPOFLOW DETAILS

ALL EXTERNAL PIPES AND CONNECTIONS TO BE ABANDONED

ALL INTERNAL DRAINAGE ASSOCIATED WITH EXISTING RWPS TO BE ABANDONED

EXISTING RWPS AND CONNECTION TO BE ABANDONED

AREA DISCHARGES AS EXISTING

GENERAL NOTES:

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LEGEND

SITE BOUNDARY BASED ON HRD-FRA-00-XX-DR-A-90-0200

EXISTING SERVICES BASED ON CCTV SURVEY AUG 2020

SW-B2 — EXISTING SURFACE WATER PIPE

EXISTING COMBINED WATER PIPE

EXISTING UNSURVEYED BUILDING DRAINAGE (ASSUMED ROUTE SHOWN)

UNITED UTILITIES RECORDS UUPS-ORD-76950 ALL UU ASSETS ARE SHOWN INDICATIVELY

UU FOUL WATER SEWER

UU SURFACE WATER SEWER

UU COMBINED WATER SEWER

WATERCOURSE

8M EASEMENT BASED ON SEWER FOR ADOPTION 6TH EDITION

PROPOSED DRAINAGE

PROPOSED GRAVITY SURFACE WATER DRAIN

PROPOSED SIPHON DRAINAGE BY SAPOFLOW

GATIC CHANNEL

SRWP — SIPHON RAIN WATER PIPE

DRAWING BASED ON PROVIDED BY SAPOFLOW
SIPHON ROOF STRATEGY ON 29.06.22

PROPOSED SIPHON MAX RATES
SRWP1 151 L/S AREA1 -0.247ha
SRWP2 151 L/S AREA2- 0.245ha
SRWP3 151 L/S AREA3- 0.244ha
SRWP4 151 L/S AREA4- 0.195ha
SRWP5 66 L/S AREA5- 0.112ha

- SIPHON BREAK ON EXTERNAL CHAMBER, SAPOFLOW IS RESPONSIBLE TO ROUTE SIPHON TO PROVIDED GRAVITY CUTINS CHAMBER
- 25MM CUT IN/CUT OF HIGHT

ASSUMED FOR MICRODRAINAGE MODEL
- 900MM DEPTH TO SOFFIT OF SIPHON PIPE ON GF
- SIPHON INVERT AND SLOPES TOWARDS GRAVITY CHAMBER

SRWP1 63.43 225Ø1:100
SRWP2 63.21 225Ø1:100
SRWP3 63.45 225Ø1:100
SRWP4 63.29 225Ø1:100
SRWP5 63.28 225Ø1:100

SIPHON SPECIALIST SHOULD INFORM CURTINS ENGINEER IF ANY INFORMATION HAS BEEN CHANGED OR ANY ASSUMPTIONS ARE NOT CORRECT

Rev:	Description:	Date:	By:	Chkd:
P06	UPDATED FOR NEW TENDER	02/02/24	ATL	MW
C01	ISSUED FOR CONSTRUCTION	23.09.22	ATL	MW
P05	DRAINAGE LAYOUT AMENDED	22.08.22	ATL	MW
P04	UPDATED ROOF STARTEGY	20.07.22	TH	MW
P03	DRAINAGE NOTE ADDED	25.04.22	ATL	MW
P02	UPDATED IN LINE WITH COMMENTS	07.04.22	ATL	MW
P01	FIRST ISSUE	22.03.22	ATL	MW

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Status: STAGE 5

Project: HAMMERSTONE ROAD

Drg Title: MAIN BUILDING ROOF CATCHMENT PLAN

Project No:	Size:	Date:	Drawn By:	Designed By:	Checked By:
068065	A1	22/03/22	ATL	ATL	MW
	Scale: 1:250				

Project Code: HRD - Originator: CUR - Zone: XX - Level: 00 - Type: DR - Discipline: C - Category / Number: 92-507 - Rev: -P06

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Appendix B

Access Roof Stairs - Condition 33 Report

Condition 33 - Confirmation of Condition Discharge

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MANCHESTER CITY COUNCIL

Town & Country Planning Act 1990 (as amended)
Planning (Listed Building & Conservation Area) Act 1990 (as amended)

Approval of details reserved by condition

Applicant

Anna Lucas
Manchester City Council
Major Projects, Capital Programmes
Corporate Core Directive
PO Box 532
Town Hall
Manchester
M60 2LA

Agent (if used)

Mr Andrew Thompson
Fletcher-Rae
Level 12
Tower 12
18-22 Bridge Street
Manchester
M3 3BZ

Part 1 – Particulars of the application/development

Proposal: Discharge of condition 33 (Roof Access Stairs) from planning approval reference 137572/JO/2023

Location: Hammerstone Road Depot, Hammerstone Road, Manchester, M18 8EQ

Date of application: 23 May 2024

Application number: CDN/24/0436

Part 2 – Particulars of decision

Manchester City Council gives notice that the detail(s) referred to in Part 1 are **Approved** in accordance with the information set out below.

Condition 33 Roof access stairs
The information and foundation designs in the Condition 33 Report ref: HRD-CUR-ZZ-XX-RP-S-00010 revision C02 dated 17 May 2024 are considered to be acceptable.

On the basis that the installation of the roof access stairs is implemented in accordance with Proposed Site Plan GA ref: HRD-FRA-00-XX-DR-A-90-0200 rev. C06, and with the information and foundation designs in the Condition 33 Report ref: HRD-CUR-ZZ-XX-RP-S-00010 revision C02 dated 17 May 2024, condition 33 is discharged.

It is, however, recommended that the condition of the Corn Brook Culvert is regularly monitored to ensure it remains free-flowing and proactively address any potential issues and maintain optimal performance of the culvert.

Date: 4 July 2024

Signed: 

Julie Roscoe
Director of Planning, Building Control & Licensing

Manchester City Council, P O Box 532, Town Hall, Manchester M60 2LA

Notes

1. This permission refers only to that required under the Town and Country Planning Act 1990 (as amended) or Planning (Listed Building & Conservation Area) Act 1990 (as amended) does not include any consent or approval under any other enactment, byelaw, order or regulation.

2 If the applicant is aggrieved by the decision of the local planning authority to refuse permission or approval for the proposed development, or to grant permission or approval subject to conditions, they may appeal to the Secretary of State in accordance with Section 78(1) of the Town and Country Planning Act 1990 or sections 20 and 21 of the Planning (Listed Building & Conservation Area) Act 1990 within six months of the date of the notice of the decision.

The Planning Inspectorate have introduced an online appeals service that can be used to make appeals online. This service is available through the gov.uk website – www.gov.uk/appeal-planning-inspectorate. The Inspectorate will publish details of your appeal on the internet.

Alternatively, appeals can be made on a form which is obtainable from Planning Inspectorate, Customer Support Unit, Room 3/15, Eagle Wing, Temple Quay House, 2 The Square, Temple Quay, Bristol BS1 or by telephone 0117 372 6372.

The Secretary of State has power to allow a longer period for the giving of a notice of appeal but they will not normally be prepared to exercise this power unless there are special circumstances that excuse the delay in giving notice of appeal.

3. The statutory requirements are those set out in Section 79(6) of the Town and Country Planning Act 1990, namely Sections 70(1) and 72(1) of the Act.

4. If either the local planning authority of the Secretary of State refuses permission to develop land or grants it subject to conditions, the owner may claim that they can neither put the land to a reasonably beneficial use in its existing state nor render the land capable of a reasonably beneficial use by the carrying out of any development which has been or would be permitted.

In these circumstances, the owner may serve a purchase notice on the Council in whose area the land is situated. This notice will require the Council to purchase his interest in the land in accordance with the provisions of Part VI of the Town and Country Planning Act 1990

5. In certain circumstances, a claim may be made against the local planning authority for compensation, where permission is refused or granted subject to conditions by the Secretary of State on appeal or on a reference of the application to them. The circumstances in which such compensation is payable are set out in Section 114 of the Town and Country Planning Act 1990.

Curtins | Building a better future

MCC, Hammerstone Road

Planning Condition 33 Report
CR - CONSTRUCTION RECORD

Curtins Ref: HRD-CUR-ZZ-XX-RP-S-00010

Revision: C02

Issue Date: 17 May 2024

Client Name: Morgan Sindall Construction

Client Address: 6th Floor, Anchorage 2, Salford Quays, Manchester

Site Address: Hammerstone Road Depot, Gorton, Manchester, M18 8EQ

Curtins
51-55 Tithebarn Street
Liverpool
L2 2SB
Tel: 0151 726 2000
www.curtins.com

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Birmingham • Bristol • Cambridge • Cardiff • Douglas • Dublin • Edinburgh • Glasgow • Kendal • Leeds • Liverpool • London • Manchester • Nottingham

Control Sheet

Rev	Description	Checked	Issued	Date
C01	First Issue		JR	17/05/2024
C02	CR – CONSTRUCTION RECORD		JR	01.11.2024

This report has been prepared for the sole benefit, use, and information for the client. The liability of Curtins Consulting Limited with respect to the information contained in the report will not extend to any third party.

Author	Signature	Date
John R Rasberry IEng IMIStructE Senior Engineer		17/05/2024

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Appendices

Appendix A
Appendix B

Executive Summary

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Your second paragraph could be regular, size 10.

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1.0 Feasibility of Avoiding Loading to the Structure

Planning Condition 33 relates to the Roof Access Stair Culvert Build Over.

Initial information submitted and uploaded onto the Planning Portal on 19th February2023 has been considered.

A review of the details regarding the proposed access staircase and its relationship to the existing Corn Brook Culvert has been undertaken.

It has been determined that the information currently provide is insufficient for a thorough evaluation of the project's impact on the culvert's integrity and safety.

Additional information is required.

The proposed location of the Roof Access Stair has been determined to provide the most advantageous access location to the roof areas of the existing buildings.

Access is required for periodic maintenance and cleaning of the roof surface and associated guttering together with periodic maintenance of the new solar roof panels.

The location provides access to the main shed roof and adjoining smaller shed roof resulting in the need for a single Roof Access Stair.

Unfortunately, this will result in the requirement for the Roof Access Stair to be constructed over the Corn Brook Culvert and the following pages will describe the arrangements, loadings and risks that are to be considered.

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2.0 Sectional View and Loadings

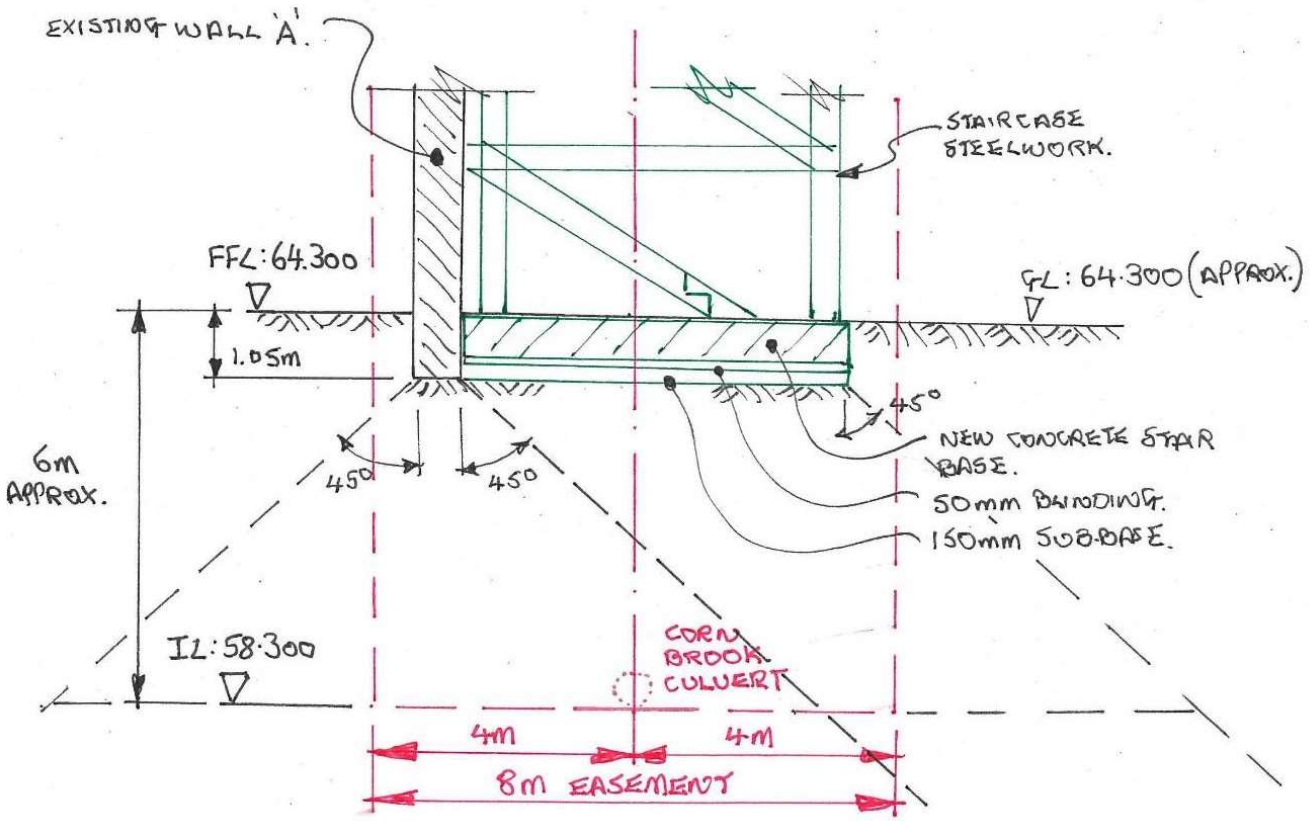


Figure 2.1 – Sectional View

The Sectional View above shown in Figure 2.1 indicates the arrangements of the existing building and proposed staircase and associated concrete slab in relation to the existing Corn Brook Culvert.

The Plan View location of the Section View above is indicated on Figure 3.1 in Section 3.0 Plan View.

The Corn Brook Culvert at the section location has an invert level of 58.300 AOD which equate to approximately 6.0m below the existing ground floor level of the existing building.

The existing building referenced 'Existing Wall 'A'', currently imposed a load on to the Corn Brook Culvert. The underside of the wall at this location has been determined by intrusive investigation as being 1.05m below ground level. The loading of this wall related to the existing and roof loadings.

It is to be noted that in this load assessment the omission of the existing crane load is NOT considered, however, it should be advised that the imposed loads from these very heavy crane loads would impose an even greater load than the load which is to be considered for the purposes of this assessment.

The existing solid brickwork wall is 13.5m high with an average width of 0.6m.

The roof spans approximately 10.0m on tot his wall.

Existing Uniformly Distributed Load (UDL) :

Existing Masonry : 13.5m x 0.6m x 18.0kN/m^3 = 145 kN/m

Existing Roof : 10.0m x 2.1kN/m^2 = 21 kN/m

Total UDL : 145 + 21 = **166 kN/m**

The bearing pressure located directly below the underside of the existing wall foundation equates to the above Total UDL divided by the width of the existing wall. In this case the average width will be used of 0.6m.

Bearing Pressure at Foundation : 166 kN/m / 0.6m = **276 kN/m^2**

As referenced on the Sectional View within Figure 1, this existing bearing pressure is spread over a 45-degree angle, and it is this load that is directly imposed on to the existing Corn Brook Culvert and its surrounding soils.

Based upon the depth of 6.0m to the Corn Brook Culvert, this spread equates to 12.0m.

The existing loading imposed on the Corn Brook Culvert from Existing Wall 'A' and the associated roof is : 276 kN/m^2 / 12.0m = **23 kN/m run**

The proposed additional loadings applied to the Corn Brook Culvert occur from the proposed new reinforced concrete pad foundation and the steel staircase and its components installed over.

The new concrete : 3.2m x 5.8m x 0.6m x 24kN/m^3 = 268 kN

The new staircase : 310kN x 4 = 1240 kN (4No stair column loads)

Total new load : 268kN + 1240kN = **1508 kN**

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The bearing pressure located directly below the concrete slab on to the existing ground equates to the above total new load divided by the plan area of the pad foundation.

Bearing Pressure of New Concrete = 1508kN / (3.2m x 5.8m) = **81.25 kN/m^2**

As referenced on the Sectional View within Figure 1, this new bearing pressure is spread over a 45-degree angle, and it is this load that is directly imposed on to the existing Corn Brook Culvert and its surrounding soils.

Based upon the depth of 6.0m to the Corn Brook Culvert, this spread equates to 12.0m plus 5.8m equalling 17.8m.

The new loading imposed on the Corn Brook Culvert from the new pad foundation and staircase is : 81.25 kN/m^2 / 17.8m = **4.5 kN/m run**

The above determination of existing and proposed loads results in an increase of applied loading to the Corn Brook Culvert of 4.5 kN/m run which is approximately a 20% increase.

This increase could be considered as being excessive, however, there are three items of note that must be taken into consideration of this result.

Firstly, as indicated earlier in this document, the former crane loads have NOT been considered. These loads would have been very large, imposing very large concentrated and moving loads directly to the existing steelwork embedded within the masonry structure which in turn would have resulted in these large moving loads being applied to the Corn brook Culvert. These loads have now been omitted. The cranes are no longer in the building with the crane rails being retained for overall stability of the existing building only.

Secondly, the use of the building has changed. The previous use of the building as a foundry for the manufacture of railway steam engines has now gone. The imposed loading criteria for foundry buildings, referring to current British Standards, is a minimum of 20 kN/m^2. For the purposes of the new building use for refuse collection lorries, the current British Standards note a general industrial imposed load of 5 kN/m^2.

Thirdly, the size of the new staircase and its relation to the existing building. The existing buildings mass is considerable. The above loadings for the existing building have only considered the affect of Existing Wall ‘A’. In addition to this wall, as indicated on Figure 3.1, Existing Wall ‘B’ imposes a similar load to the Corn Brook Culvert. This load occurs in same line as the Corn Brook Culvert, transferring

its loads along the length. The location of the new staircase and its pad foundation are small in relation to the size and mass of the existing building.

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3.0 Foundation Plan

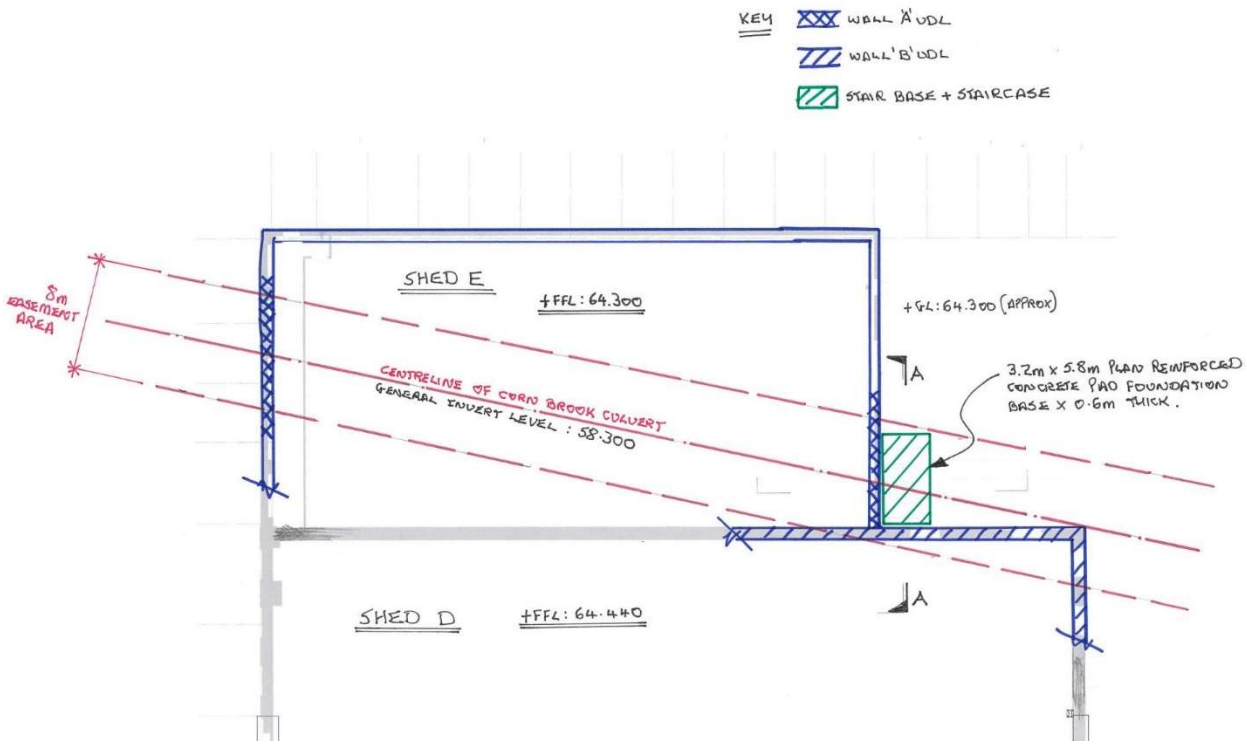


Figure 3.1 – Foundation Plan

With reference to Figure 3.1 above and Figure 2.1 and associated notes, loadings and descriptions within Section 2.0, the relationship between the existing building, existing Corn Brook Culvert and the proposed new staircase and pad foundation are indicated and explained.

As discussed previously, Existing Walls 'A' and 'B' are built directly over the existing Corn Brook Culvert, imposing considerable loads. The new staircase and pad foundation are small in comparison not only in scale but also in actual applied load.

The reduction in the buildings use imposed load and omittance of the existing crane load reduce the effects of loading on to the Corn Brook Culvert.

As determined within Section 2.0, the existing building load applied at the Corn Brook Culvert level is 23 kN/m run, the new staircase and pad foundation create an additional 4.5 kN/m run, and approximate 20% increase. The reduction of the building use-imposed load from 20 kN/m^2 to 5 kN/m^2 is a reduction in load of 75%.

To conclude, the overall load to be applied to the Corn Brook Culvert is **REDUCED**.

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4.0 Evidence, Assurance, Risk

The new steel staircase is formed of steelwork sections that are assembled on site using bolts. The principal of construction reflects the ability of this structure to be taken down in a controlled manner through a similar method.

The steel staircase is, therefore, considered to be a demountable structure.

The concrete pad foundation is constructed incorporating steel reinforcement.

The footprint of the new concrete has been designed to be no more than is required to support the new steel staircase.

The design of the concrete pad foundation has been determined to spread the steel staircase loads over its area (3.2m x 5.8m = 18.56m^2) to ensure that the load applied to the ground are kept to a minimum and evenly over the area.

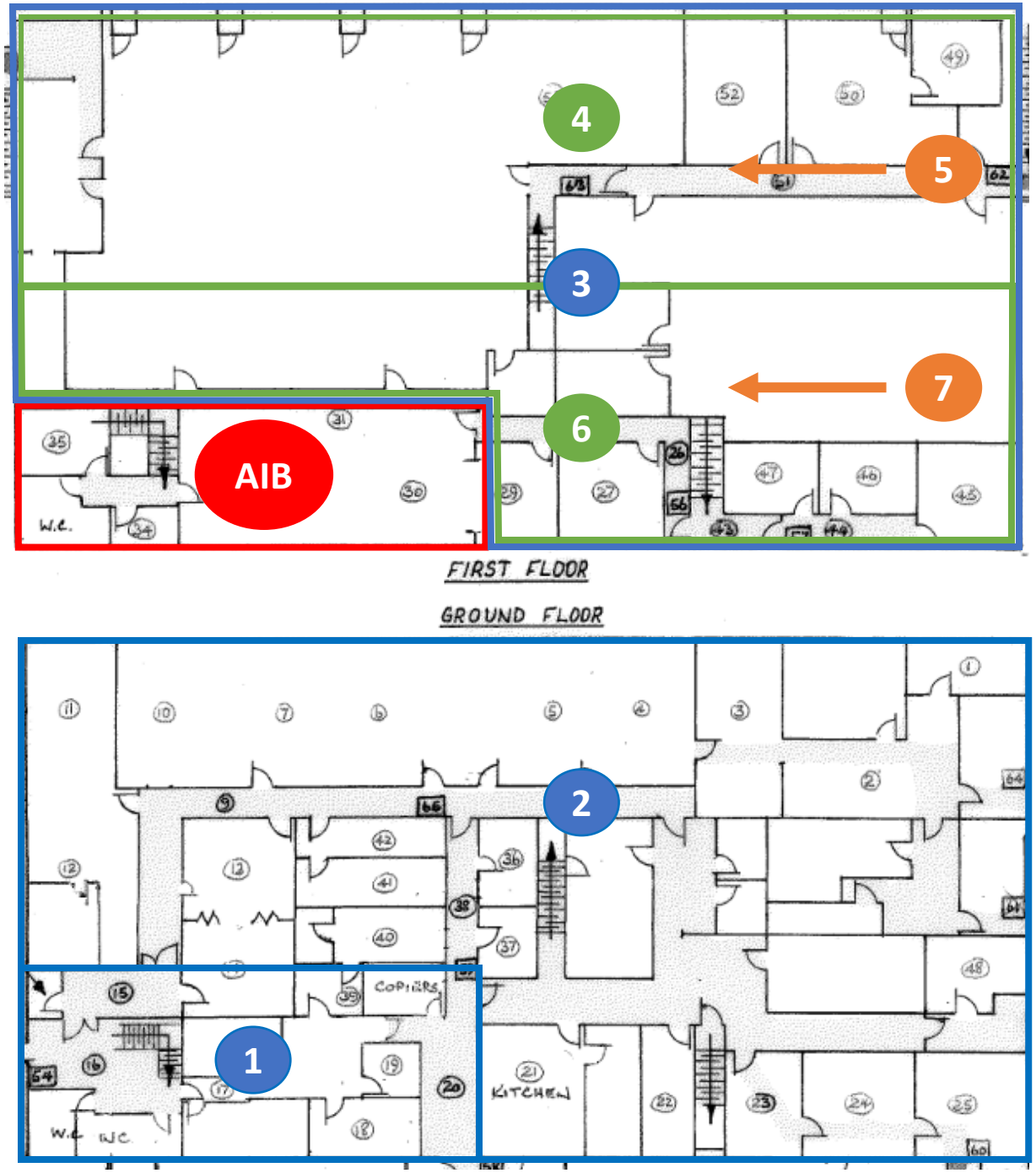
These measure have been incorporated into the design of the staircase and support base to ensure that the loads applied over the Corn Brook Culvert are as low as possible (4.5 kN/m run).

The additional reductions in imposed load that have been incorporated into he designs and usage of the building reduce the current loads applied to the Corn Brook Culvert and, therefore, we would conclude that the above construction, load reductions, load spread are adequate to ensure that the resulting risk to the Corn Brook Culvert are reduced to the absolute minimum but ensuring that the required access staircase can be used safely and, in the event of any requirement for access to the Corn Brook Culvert, can be taken down and removed safely.

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Appendix C
Demolition Plan

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Option 1 (2 Contractors)

Sequence;

Area 1 – Soft strip walls & ceilings to underside of the joists below AIB area
Area 2 – Soft strip walls & ceilings to underside of the joists remaining ground floor
Area 3 – Soft strip walls & ceilings to first floor
AIB – Removal of AIB (Subject to HSE notice/temp works agreement)
Area 4 – Removal of 1st floor joists to West half of the building
Area 5 – Start Removal of roof cement sheets
Area 6 – Removal of 1st floor joists to East half of the building
Area 7 – Start Removal of roof cement sheets
Demolish Shell to slab

Option 2 (1 Contractor)

AIB – Removal of AIB (Subject to HSE notice/temp works agreement)
Area 1&2 Area 4&5 – Soft strip walls & ceilings to underside of the joists remaining ground floor by removal of the North gable end and mechanical removal
Area 6&7 – Start Removal of roof cement sheets
Demolish Shell to slab

Appendix D

CCTV Survey Information

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unit D. Russell Road, Rock Ferry
Tel. 0151 643 0800
derek.kearns@nrcwws.co.uk

WEB PROJECT
CLICK TO OPEN THIS PROJECT

genuine embedded reporting WinCan inside

Project

Project Name: Adana Hammerstone Rd Goreton Manchester projects

Project Description: WinCan Import in Miraculix Standard

Project Date: 17/10/2023

Inspection Standard: MSCC5 Sewers & Drainage GB (SRM5 Scoring)

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Tel. 0151 643 0800
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Project Information

Project Name	Project Number	Project Date
Adana Hammerstone Rd Goreton Manchester projects		17/10/2023

Client

Company: Adana Construction
Department: Adana House
Street: 140 Higher Hillgate
Town or City: Stockport
County: Cheshire
Post Code: SK1 3QT
Phone: 0161 477 7211

Site

Company: ADANA CONSTRUCTION
Contact: Adana Hammerstone Rd Goreton Manchester projects

Contractor

Company: NRCWWS
Contact: Derek Kearns
Department: Director
Street: unit D. Russell Road
Town or City: Rock Ferry
County: Wirral
Post Code: CH42 1LU
Phone: 0151 643 0800
Email: derek.kearns@nrcwws.co.uk

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Section Inspection - 28/06/2023 - FWMH02X

WEB PROJECT CLICK TO OPEN THIS SECTION

Item No.	Insp. No.	Date:	Time:	Client`s Job Ref	Weather	Pre Cleaned	PLR
1	2	28/06/23	10:28	DK0363	No Rain Or Snow	No	FWMH02X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
JAME G	PJ210MA	Atex Crawler	Not Specified	Not Specified	Not Specified

Town or Village:	Manchester	**Inspection Direction:**	Downstream	**Upstream Node:**	FWMH02
Road:	Hammerstone Road	**Inspected Length:**	26.32 m	**Upstream Pipe Depth:**	5.050 m
Location:	Other walkway	**Total Length:**	26.32 m	**Downstream Node:**	BRF01
Surface Type:	Concrete Footway	**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Combined	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	450 mm
Flow Control:	No flow control	**Pipe Material:**	Vitrified clay
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Sample condition survey	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:135

Depth: 5.05 m
FWMH02



Position [m]		Code	Observation	MPEG	Photo	Grade
0.00		MH	Start node, manhole, reference: FWMH02	00:00:00		
0.00		WL	Water level, 5% of the vertical dimension	00:00:06		
2.08		DEEJ	Attached deposits, encrustation at joint from 8 o'clock to 4 o'clock, 10% cross-sectional area loss	00:00:59	FWMH02X_a7ce946b-a5c9-42	3
3.51		CCJ	Crack, circumferential at joint from 11 o'clock to 2 o'clock	00:02:00	FWMH02X_e7d97b54-054d-48	2 / 2
3.51	S02	CLJ	Crack, longitudinal at joint at 12 o'clock, start	00:02:06	FWMH02X_2a4034d0-619c-41	
4.31	S01	LL	Line deviates left, start	00:02:25	FWMH02X_a9c62bf7-3e55-45f3	
5.26	F02	CLJ	Crack, longitudinal at joint at 12 o'clock, finish	00:03:07		2 / 2
6.09		B	Broken pipe at 9 o'clock	00:03:27	FWMH02X_843432e1-3587-4e	4
8.98		CN	Connection other than junction at 3 o'clock, 150mm dia	00:05:31		
8.98	F01	LL	Line deviates left, finish	00:05:41		
10.18		DES	Settled deposits, fine, 15% cross-sectional area loss	00:06:17		3
11.22		REM	General remark: LOCATING LINE AS WE SURVEY	00:07:29		
12.17		LL	Line deviates left	00:07:49		
12.17		FLJ	Fracture, longitudinal at joint at 12 o'clock	00:08:01	FWMH02X_a5d1eb1f-37c1-4bc	3 / 2

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Section Inspection - 28/06/2023 - FWMH02X

WEB PROJECT CLICK TO OPEN THIS SECTION

Item No.	Insp. No.	Date:	Time:	Client`s Job Ref	Weather	Pre Cleaned	PLR
1	2	28/06/23	10:28	DK0363	No Rain Or Snow	No	FWMH02X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
JAME G	PJ210MA	Atex Crawler	Not Specified	Not Specified	Not Specified



Scale: 1:135 Position [m]	Code	Observation	MPEG	Photo	Grade
18.85	B	Broken pipe from 8 o'clock to 4 o'clock	00:12:19	FWMH02X_7d793936-b1e4-4fb	4
18.85	D	Deformed sewer or drain, 15%	00:12:30		5 / 3
19.49	ID	Infiltration, dripping at 12 o'clock	00:12:41	FWMH02X_7c48f7e4-fcd9-4bc9	
20.54	LL	Line deviates left	00:13:44		
20.54	CLJ	Crack, longitudinal at joint at 12 o'clock	00:13:50		2 / 2
25.62	LR	Line deviates right: slight	00:15:50		
26.31	LD	Line deviates down	00:16:09		
26.32	BRF	Finish node, major connection without manhole, reference: BRF01	00:16:21		

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
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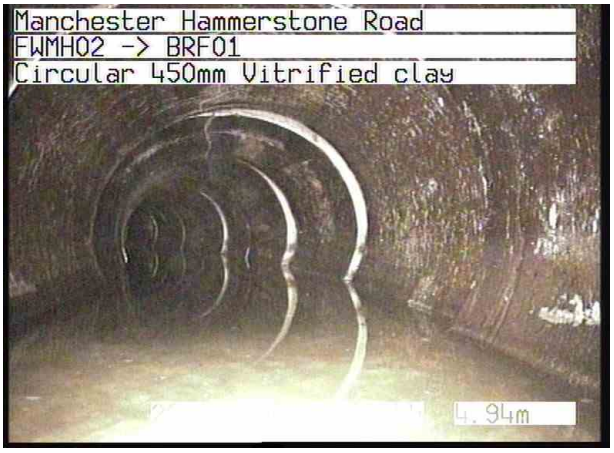
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derek.kearns@nrcwws.co.uk

Section Pictures - 28/06/2023 - FWMH02X

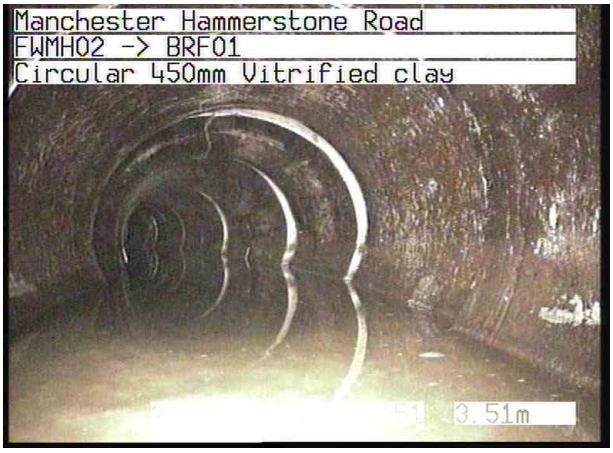
Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
1	Downstream	FWMH02X	DK0363	



FWMH02X_a7ce946b-a5c9-424a-86eb-51f0a8fcff04_20230628_102921_045.jpg, 00:00:59, 2.08 m
Attached deposits, encrustation at joint from 8 o'clock to 4 o'clock, 10% cross-sectional area loss



FWMH02X_e7d97b54-054d-4842-80fd-ac972e072d39_20230704_091850_824.jpg, 00:02:00, 3.51 m
Crack, circumferential at joint from 11 o'clock to 2 o'clock



FWMH02X_2a4034d0-619c-4168-ab0f-bc0f286ce88d_20230704_091855_605.jpg, 00:02:06, 3.51 m
Crack, longitudinal at joint at 12 o'clock, start



FWMH02X_a9c62bf7-3e55-45f3-a47c-e56f0c333b3e_20230704_091900_013.jpg, 00:02:25, 4.31 m
Line deviates left, start

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Section Pictures - 28/06/2023 - FWMH02X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
1	Downstream	FWMH02X	DK0363	



FWMH02X_843432e1-3587-4ec5-aad0-246872d8816d_20230704_092046_828.jpg, 00:03:27, 6.09 m
Broken pipe at 9 o'clock



FWMH02X_a5d1eb1f-37c1-4bc2-8a2e-f654ab212450_20230628_103631_547.jpg, 00:08:01, 12.17 m
Fracture, longitudinal at joint at 12 o'clock



FWMH02X_7d793936-b1e4-4fb6-b0b0-916719dee72a_20230704_092158_557.jpg, 00:12:19, 18.85 m
Broken pipe from 8 o'clock to 4 o'clock



FWMH02X_7c48f7e4-fcd9-4bc9-810b-eaa80249d89c_20230628_104110_684.jpg, 00:12:41, 19.49 m
Infiltration, dripping at 12 o'clock

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Section Pictures - 28/06/2023 - FWMH02X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
1	Downstream	FWMH02X	DK0363	



FWMH02X_efbfd325-baf5-469d-b1a8-2b283e3c7379_20230628_104118_343.jpg, 00:12:41, 19.49 m
Infiltration, dripping at 12 o'clock

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Section Inspection - 04/10/2023 - MH24X

WEB PROJECT CLICK TO OPEN THIS SECTION

Item No.	Insp. No.	Date:	Time:	Client`s Job Ref	Weather	Pre Cleaned	PLR
2	1	04/10/23	10:11	DK0526 ADANA CONSTRUCTION	Rain	Yes	MH24X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
ROBBIE DAVIN	Not Specified	Solo	Not Specified	Not Specified	1

Town or Village:	Gorton, Manchester	**Inspection Direction:**	Downstream	**Upstream Node:**	MH24
Road:	1 Hammerstone Road	**Inspected Length:**	17.72 m	**Upstream Pipe Depth:**	
Location:	Property or buildings	**Total Length:**	17.72 m	**Downstream Node:**	DS
Surface Type:		**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Combined	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	100 mm
Flow Control:	No flow control	**Pipe Material:**	Vitrified clay
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Sample condition survey	**Lining Material:**	No Lining

Comments: FOUL SMELL IN MH
Recommendations:

Scale: 1:154



Position [m]	Code	Observation	MPEG	Photo	Grade
0.00	MH	Start node, manhole, reference: MH24	00:00:00		
0.00	WL	Water level, 5% of the vertical dimension	00:00:01		
10.78	JDM	Joint displaced, medium	00:00:41	MH24 DS_10-78 m_101357	
17.72	MHF	Finish node, manhole, reference: DS: UNCHARTED, POSS UNDER CABINS	00:01:15	MH24 DS_17-72 m_101457	

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0

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Section Pictures - 04/10/2023 - MH24X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
2	Downstream	MH24X	DK0526 ADANA	NRC WWS LTD



MH24 DS_10-78m_101357.jpg, 00:00:41, 10.78 m
Joint displaced, medium



MH24 DS_17-72m_101457.jpg, 00:01:15, 17.72 m
Finish node, manhole, reference: DS, UNCHARTED, POSS UNDER CABINS

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Section Inspection - 06/10/2023 - C1X

WEB PROJECT CLICK TO OPEN THIS SECTION

Item No.	Insp. No.	Date:	Time:	Client`s Job Ref	Weather	Pre Cleaned	PLR
3	1	06/10/23	9:35	DK0526 ADANA CONSTRUCTION	Rain	Yes	C1X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
ROBBIE DAVIN	Not Specified	Solo	Not Specified	Not Specified	1

Town or Village:	Gorton, Manchester	**Inspection Direction:**	Downstream	**Upstream Node:**	C1
Road:	1 Hammerstone Road	**Inspected Length:**	10.69 m	**Upstream Pipe Depth:**	3.250 m
Location:	Property or buildings	**Total Length:**	10.69 m	**Downstream Node:**	DS
Surface Type:		**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Combined	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	225 mm
Flow Control:	No flow control	**Pipe Material:**	Vitrified clay
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Sample condition survey	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:93



Position [m]	Code	Observation	MPEG	Photo	Grade
0.00	MH	Start node, manhole, reference: C1	00:00:00		
0.00	WL	Water level, 10% of the vertical dimension	00:00:00		
4.20	H	Hole in drain or sewer from 9 o'clock to 2 o'clock: POOR REPAIR	00:00:22	MH C1 DS_4-20m _094321.j	
10.69	BRF	Finish node, major connection without manhole, reference: DS: CULVERT	00:00:47	MH C1 DS_10-69 m_094359	

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0

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Section Pictures - 06/10/2023 - C1X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
3	Downstream	C1X	DK0526 ADANA	NRC WWS LTD



MH C1 DS_4-20m_094321.jpg, 00:00:22, 4.20 m
Hole in drain or sewer from 9 o'clock to 2 o'clock, POOR REPAIR



MH C1 DS_10-69m_094359.jpg, 00:00:47, 10.69 m
Finish node, major connection without manhole, reference: DS, CULVERT

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Section Inspection - 22/08/2023 - MH34X

WEB PROJECT CLICK TO OPEN THIS SECTION

Item No.	Insp. No.	Date:	Time:	Client`s Job Ref	Weather	Pre Cleaned	PLR
4	1	22/08/23	12:55	Not Specified	No Rain Or Snow	Yes	MH34X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
D.MORRISON	PK20 Syx	Coiler	Not Specified	Not Specified	Not Specified

Town or Village:	Manchester	**Inspection Direction:**	Downstream	**Upstream Node:**	MH34
Road:	Hammerstone Road	**Inspected Length:**	17.55 m	**Upstream Pipe Depth:**	
Location:	Road	**Total Length:**	17.55 m	**Downstream Node:**	EXFW1B
Surface Type:	Concrete Footway	**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	150 mm
Flow Control:	No flow control	**Pipe Material:**	Vitrified clay
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Investment planning	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:152	Position [m]	Code	Observation	MPEG	Photo	Grade
Depth: m MH34						
	0.00	MH	Start node, manhole, reference: MH34	00:00:00		
	0.00	WL	Water level, 0% of the vertical dimension	00:00:02		
	3.68	WL	Water level, 5% of the vertical dimension	00:00:21		
	17.46	FC	Fracture, circumferential from 12 o'clock to 12 o'clock: ON BACKDROP	00:01:20	MH34X_0941c1a5-6953-41b3-	3 / 2
	17.46	REM	General remark: BACKDROP	00:01:29		
EXFW1B Depth: m	17.55	MHF	Finish node, manhole, reference: EXFW1B	00:01:36		

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
1	40.0	2.3	40.0	3.0	1	1.0	0.1	1.0	2.0

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Section Pictures - 22/08/2023 - MH34X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
4	Downstream	MH34X		DK0472



MH34X_0941c1a5-6953-41b3-8a84-c1a6191d4dc4_20230822_125832_514.jpg, 00:01:20, 17.46 m
Fracture, circumferential from 12 o'clock to 12 o'clock, ON BACKDROP

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Section Inspection - 22/08/2023 - MH36X

WEB PROJECT CLICK TO OPEN THIS SECTION

Item No.	Insp. No.	Date:	Time:	Client`s Job Ref	Weather	Pre Cleaned	PLR
5	1	22/08/23	12:02	Not Specified	No Rain Or Snow	Yes	MH36X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
D.MORRISON	PK20 Syx	Coiler	Not Specified	Not Specified	Not Specified

Town or Village:	Manchester	**Inspection Direction:**	Downstream	**Upstream Node:**	MH36
Road:	Hammerstone Road	**Inspected Length:**	13.21 m	**Upstream Pipe Depth:**	
Location:	Road	**Total Length:**	13.21 m	**Downstream Node:**	EXFW1B
Surface Type:	Concrete Footway	**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Foul	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	100 mm
Flow Control:	No flow control	**Pipe Material:**	Vitrified clay
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Investment planning	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:115	Position [m]	Code	Observation	MPEG	Photo	Grade
Depth: m MH36						
	0.00	IC	Start node, inspection chamber, reference: MH36	00:00:00		
	0.00	WL	Water level, 5% of the vertical dimension	00:01:00		
	0.83	MCPVC	Pipe material changes to polyvinyl chloride at this point	00:00:43	MH36X_bd74fbc5-b345-47a2-	
	7.59	WL	Water level, 35% of the vertical dimension	00:01:58		
	8.37	CUW	Loss of vision, camera under water	00:02:04		
	9.57	WL	Water level, 100% of the vertical dimension	00:02:54		
	13.21	MHF	Finish node, manhole, reference: EXFW1B	00:03:11		
EXFW1B Depth: m						

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
0	0.0	0.0	0.0	1.0	0	0.0	0.0	0.0	1.0

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Section Pictures - 22/08/2023 - MH36X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
5	Downstream	MH36X		DK0472



MH36X_bd74fbc5-b345-47a2-8157-43e8e117741c_20230822_120336_574.jpg, 00:00:43, 0.83 m
Pipe material changes to polyvinyl chloride at this point

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Section Inspection - 04/10/2023 - FWIC2X

WEB PROJECT CLICK TO OPEN THIS SECTION

Item No.	Insp. No.	Date:	Time:	Client`s Job Ref	Weather	Pre Cleaned	PLR
6	1	04/10/23	10:40	DK0526 ADANA CONSTRUCTION	Rain	Yes	FWIC2X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
ROBBIE DAVIN	Not Specified	Solo	Not Specified	Not Specified	1

Town or Village:	Gorton, Manchester	**Inspection Direction:**	Upstream	**Upstream Node:**	FWIC2
Road:	1 Hammerstone Road	**Inspected Length:**	7.74 m	**Upstream Pipe Depth:**	
Location:	Property or buildings	**Total Length:**	7.74 m	**Downstream Node:**	FWIC1
Surface Type:		**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Foul	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	100 mm
Flow Control:	No flow control	**Pipe Material:**	Polyvinyl chloride
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Sample condition survey	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:68



Position [m]	Code	Observation	MPEG	Photo	Grade
0.00	IC	Start node, inspection chamber, reference: FWIC1	00:00:00		
0.00	WL	Water level, 5% of the vertical dimension	00:00:00		
1.14	WL	Water level, 20% of the vertical dimension	00:00:10		
5.53	WL	Water level, 50% of the vertical dimension	00:01:03		
6.16	CUW	Loss of vision, camera under water	00:01:11		
7.74	ICF	Finish node, inspection chamber, reference: FWIC2	00:01:21		

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0

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Section Inspection - 29/09/2023 - Fwmh01X

WEB PROJECT CLICK TO OPEN THIS SECTION

Item No.	Insp. No.	Date:	Time:	Client`s Job Ref	Weather	Pre Cleaned	PLR
7	1	29/09/23	11:32	DK0526	No Rain Or Snow	Yes	FWMH01X

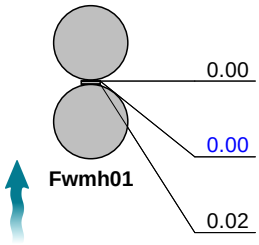
Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
P Windle	Not Specified	Not Specified	Not Specified	Not Specified	1

Town or Village:	Manchester	**Inspection Direction:**	Upstream	**Upstream Node:**	FWMH01
Road:	Hammerstone Rd	**Inspected Length:**	0.02 m	**Upstream Pipe Depth:**	
Location:	Other location	**Total Length:**	0.02 m	**Downstream Node:**	FWMH02
Surface Type:		**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Foul	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	225 mm
Flow Control:	No flow control	**Pipe Material:**	Vitrified clay
Year Constructed:	Not Specified	**Lining Type:**	Cured in place lining
Inspection Purpose:	Post rehab inspection	**Lining Material:**	Fibre reinforced plastics

Comments: POST PATCH CCTV
Recommendations:

Scale: 1:50



Position [m]	Code	Observation	MPEG	Photo	Grade
0.00	MH	Start node, manhole, reference: F2	00:00:01		
0.00	WL	Water level, 5% of the vertical dimension	00:00:02		
0.02	MHF	Finish node, manhole, reference: F1: patch on view	00:00:45	F1X_71490003-b3f0-40ea-863b	

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
0	0.0	0.0	0.0	1.0	0	0.0	0.0	0.0	1.0

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Section Pictures - 29/09/2023 - Fwmh01X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
7	Upstream	FWMH01X	DK0526	



F1X_71490003-b3f0-40ea-863b-8bdebed17308_20231017_145304_211.jpg, 00:00:45, 0.02 m
Finish node, manhole, reference: F1, patch on view

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Section Inspection - 28/06/2023 - FWMH01X

WEB PROJECT CLICK TO OPEN THIS SECTION

Item No.	Insp. No.	Date:	Time:	Client`s Job Ref	Weather	Pre Cleaned	PLR
8	1	28/06/23	14:00	DK0367	No Rain Or Snow	Yes	FWMH01X

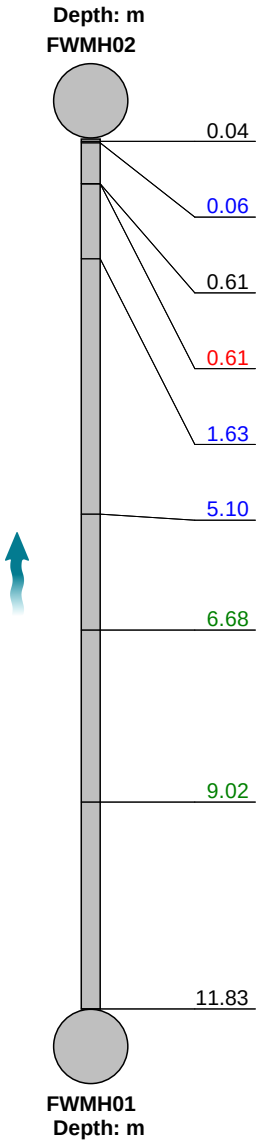
Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
jamie g	Not Specified	Push Rod	Not Specified	Not Specified	1

Town or Village:	M18 8Eq	**Inspection Direction:**	Upstream	**Upstream Node:**	FWMH01
Road:	Hammerstone Road	**Inspected Length:**	11.83 m	**Upstream Pipe Depth:**	
Location:	Road	**Total Length:**	11.83 m	**Downstream Node:**	FWMH02
Surface Type:		**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Foul	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	225 mm
Flow Control:	No flow control	**Pipe Material:**	Vitrified clay
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Sample condition survey	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:103



Position [m]	Code	Observation	MPEG	Photo	Grade
0.04	MH	Start node, manhole, reference: FWMH02	00:00:00		
0.06	WL	Water level, 0% of the vertical dimension	00:00:00		
0.61	JN	Junction at 6 o'clock, 225mm dia	00:00:06		
0.61	JDL	Joint displaced, large	00:00:15	FWMH02 US FWMH01_	1 / 4
1.63	WL	Water level, 15% of the vertical dimension	00:00:22		
5.10	WL	Water level, 5% of the vertical dimension	00:00:37		
6.68	DER	Settled deposits, coarse, 5% cross-sectional area loss	00:00:43	FWMH01X _fca69c75 -ec5f-4891	3
9.02	LR	Line deviates right	00:00:51		
11.83	MHF	Finish node, manhole, reference: FWMH01	00:01:03		

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
1	2.0	0.2	2.0	1.0	2	5.0	0.6	7.0	4.0

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Section Pictures - 28/06/2023 - FWMH01X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
8	Upstream	FWMH01X	DK0367	



FWMH02 US FWMH01_0-61m_140927.jpg, 00:00:15, 0.61 m
Joint displaced, large



FWMH01X_fca69c75-ec5f-4891-b983-80ffa3de1089_20230704_091625_459.jpg, 00:00:43, 6.68 m
Settled deposits, coarse, 5% cross-sectional area loss

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Section Inspection - 22/08/2023 - G3X

WEB PROJECT CLICK TO OPEN THIS SECTION

Item No.	Insp. No.	Date:	Time:	Client`s Job Ref	Weather	Pre Cleaned	PLR
9	1	22/08/23	14:50	Not Specified	No Rain Or Snow	Yes	G3X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
D.MORRISON	PK20 Syx	Coiler	Not Specified	Not Specified	Not Specified

Town or Village:	Manchester	**Inspection Direction:**	Upstream	**Upstream Node:**	G3
Road:	Hammerstone Road	**Inspected Length:**	7.98 m	**Upstream Pipe Depth:**	
Location:	Road	**Total Length:**	7.98 m	**Downstream Node:**	M32
Surface Type:	Concrete Footway	**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	150 mm
Flow Control:	No flow control	**Pipe Material:**	Vitrified clay
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Investment planning	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:70



Position [m]	Code	Observation	MPEG	Photo	Grade
0.00	MH	Start node, manhole, reference: M32	00:00:00		
0.00	WL	Water level, 0% of the vertical dimension	00:00:01		
6.29	SS	Surface damage, spalling from 10 o'clock to 2 o'clock	00:00:42	G3X_0aa1 f7fa-6cd4-4596-b480	2
7.98	GYF	Finish node, gully, reference: G3	00:00:58		

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
1	20.0	2.5	20.0	2.0	0	0.0	0.0	0.0	1.0

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Section Pictures - 22/08/2023 - G3X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
9	Upstream	G3X		DK0472



G3X_0aa1f7fa-6cd4-4596-b480-e012c28a25d0_20230822_145216_936.jpg, 00:00:42, 6.29 m
Surface damage, spalling from 10 o'clock to 2 o'clock

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Section Inspection - 02/10/2023 - Rod EyeX

WEB PROJECT CLICK TO OPEN THIS SECTION

Item No.	Insp. No.	Date:	Time:	Client`s Job Ref	Weather	Pre Cleaned	PLR
10	1	02/10/23	11:02	N Kirton	No Rain Or Snow	Yes	ROD EYEX

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
ROBBIE DAVIN	PJ210MA	Pushrod	Not Specified	Private Drain	Not Specified

Town or Village:	Adana	**Inspection Direction:**	Upstream	**Upstream Node:**	ROD EYE
Road:	Hammerstone Rd	**Inspected Length:**	32.23 m	**Upstream Pipe Depth:**	
Location:	Property or buildings	**Total Length:**	32.23 m	**Downstream Node:**	MH1
Surface Type:	Asphalt Highway	**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Culverted watercourse	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	150 mm
Flow Control:	No flow control	**Pipe Material:**	Polyvinyl chloride
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Sample condition survey	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:280



Position [m]	Code	Observation	MPEG	Photo	Grade
0.00	MH	Start node, manhole, reference: MH1	00:00:00		
0.00	WL	Water level, 5% of the vertical dimension	00:00:06		
1.24	JN	Junction at 2 o'clock, 100mm dia	00:00:27		
2.07	WL	Water level, 10% of the vertical dimension	00:00:33		
5.04	WL	Water level, 5% of the vertical dimension	00:00:42		
13.14	D	Deformed sewer or drain, 30%	00:01:22	Rod EyeX_89df72d6-3b80	4 / 4
16.50	D	Deformed sewer or drain, 5%	00:01:41	Rod EyeX_ccd54a6e-8f3	1 / 2
29.03	WL	Water level, 10% of the vertical dimension	00:02:43		
31.18	JN	Junction at 9 o'clock, 100mm dia	00:03:04		
31.55	JN	Junction at 3 o'clock, 100mm dia	00:03:17		
32.04	LU	Line deviates up	00:03:29		
32.23	REF	Finish node, rodding eye, reference: Rod Eye	00:03:45		

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
2	80.0	2.5	80.0	4.0	2	5.0	0.2	6.0	4.0

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Section Pictures - 02/10/2023 - Rod EyeX

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
10	Upstream	ROD EYEX	N Kirton	NRC WWS Ltd



Rod
EyeX_89df72d6-3b80-41c3-8f57-19804605fbd5_20231002_110348_578.jpg, 00:01:22, 13.14 m
Deformed sewer or drain, 30%



Rod
EyeX_ccd54a6e-8f3a-4a5b-afef-6d8136f2e6f5_20231002_110406_458.jpg, 00:01:41, 16.50 m
Deformed sewer or drain, 5%

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Section Inspection - 02/10/2023 - MH1AX

WEB PROJECT CLICK TO OPEN THIS SECTION

Item No.	Insp. No.	Date:	Time:	Client`s Job Ref	Weather	Pre Cleaned	PLR
11	1	02/10/23	10:54	N Kirton	No Rain Or Snow	Yes	MH1AX

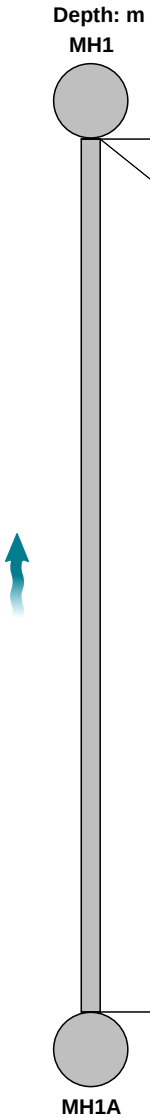
Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
ROBBIE DAVIN	PJ210MA	Crawler	Not Specified	Private Drain	Not Specified

Town or Village:	Adana	**Inspection Direction:**	Upstream	**Upstream Node:**	MH1A
Road:	Hammerstone Rd	**Inspected Length:**	22.59 m	**Upstream Pipe Depth:**	1.070 m
Location:	Property or buildings	**Total Length:**	22.59 m	**Downstream Node:**	MH1
Surface Type:	Asphalt Highway	**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Culverted watercourse	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	150 mm
Flow Control:	No flow control	**Pipe Material:**	Polyvinyl chloride
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Sample condition survey	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:196



Position [m]	Code	Observation	MPEG	Photo	Grade
0.00	MH	Start node, manhole, reference: MH1	00:00:00		
0.00	WL	Water level, 5% of the vertical dimension	00:00:08		
22.59	MHF	Finish node, manhole, reference: MH1A	00:01:34		

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
0	0.0	0.0	0.0	1.0	0	0.0	0.0	0.0	1.0

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Section Inspection - 29/09/2023 - UU 3803X

WEB PROJECT CLICK TO OPEN THIS SECTION

Item No.	Insp. No.	Date:	Time:	Client`s Job Ref	Weather	Pre Cleaned	PLR
12	1	29/09/23	11:05	N Kirton	No Rain Or Snow	Yes	UU 3803X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
ROBBIE DAVIN	PJ210MA	Crawler	Not Specified	Private Drain	Not Specified

Town or Village:	Adana	**Inspection Direction:**	Upstream	**Upstream Node:**	UU 3803
Road:	Hammerstone Rd	**Inspected Length:**	47.24 m	**Upstream Pipe Depth:**	
Location:	Property or buildings	**Total Length:**	47.24 m	**Downstream Node:**	MH1
Surface Type:	Asphalt Highway	**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Culverted watercourse	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	750 mm
Flow Control:	No flow control	**Pipe Material:**	Brick
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Sample condition survey	**Lining Material:**	No Lining

Comments:
Recommendations:



Scale: 1:410 Position [m]		Code	Observation	MPEG	Photo	Grade
Depth: m MH1 0.00		MH	Start node, manhole, reference: MH1	00:00:00		
0.00		WL	Water level, 10% of the vertical dimension	00:00:07		
0.00		REM	General remark: rope running along invert	00:00:17	UU 3803X_7c 4fe95a-61	
0.60	S01	DEE	Attached deposits, encrustation from 7 o'clock to 5 o'clock, 5% cross-sectional area loss, start: Patchy	00:00:38	UU 3803X_ec a04b50-e1	
11.45		CN	Connection other than junction at 1 o'clock, 150mm dia	00:01:37	UU 3803X_2d 64c7c1-49	
26.09		MH	Start node, manhole, reference: Node point: 150mm pipe incoming	00:03:18	UU 3803X_7c 8327ac-b3	
33.23		CXD	Connection defective, connecting pipe is damaged at 12 o'clock, 150mm dia: saddle to main missing	00:04:17	UU 3803X_eff 886a3-924	
36.74		DES	Settled deposits, fine, 10% cross-sectional area loss	00:04:51		3
37.38		MH	Start node, manhole, reference: node point: no laterals	00:05:45	UU 3803X_89 4b8984-5c	
38.99	C01	DEE	Attached deposits, encrustation from 7 o'clock to 5 o'clock, 10% cross-sectional area loss, change: Patchy	00:06:28	UU 3803X_99 a6e569-ce	
44.62		CX	Connection defective at 10 o'clock, 225mm dia: Half blocked with encrustation	00:07:31	UU 3803X_d2 a16a24-99	
45.40		CN	Connection other than junction at 3 o'clock, 300mm dia	00:08:06	UU 3803X_3c a19a47-24	
45.63		DES	Settled deposits, fine, 20% cross-sectional area loss	00:08:41		4
47.24	F01	DEE	Attached deposits, encrustation from 7 o'clock to 5 o'clock, 10% cross-sectional area loss, finish: Patchy			3
47.24		SA	Survey abandoned: Due to silt	00:09:51		

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
0	0.0	0.0	0.0	1.0	3	7.0	2.1	101.0	4.0

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Section Pictures - 29/09/2023 - UU 3803X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
12	Upstream	UU 3803X	N Kirton	NRC WWS Ltd



UU
3803X_7c4fe95a-6172-400c-8e55-e9b46b12f59b_20230929_110556_997.jpg, 00:00:17, 0.00 m
General remark, rope running along invert



UU
3803X_eca04b50-e131-4dfe-8786-ba9a1bf9edd0_20230929_110618_260.jpg, 00:00:38, 0.60 m
Attached deposits, encrustation from 7 o'clock to 5 o'clock, 5% cross-sectional area loss, start, Patchy



UU
3803X_2d64c7c1-4914-4176-8e85-39894b60b95c_20230929_110716_314.jpg, 00:01:37, 11.45 m
Connection other than junction at 1 o'clock, 150mm dia



UU
3803X_7c8327ac-b3ef-4fae-86ac-5e048638f9f8_20230929_110857_666.jpg, 00:03:18, 26.09 m
Start node, manhole, reference: Node point, 150mm pipe incoming

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Section Pictures - 29/09/2023 - UU 3803X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
12	Upstream	UU 3803X	N Kirton	NRC WWS Ltd



UU
3803X_eff886a3-9245-4379-9a54-673bd7d69ebb_20230929_110956_482.jpg, 00:04:17, 33.23 m
Connection defective, connecting pipe is damaged at 12 o'clock, 150mm dia, saddle to main missing



UU
3803X_894b8984-5c81-408d-a3ff-856742ecc766_20230929_111130_446.jpg, 00:05:45, 37.38 m
Start node, manhole, reference: node point, no laterals



UU
3803X_99a6e569-ced3-4896-b8c2-f3ac361cc375_20230929_111207_657.jpg, 00:06:28, 38.99 m
Attached deposits, encrustation from 7 o'clock to 5 o'clock, 10% cross-sectional area loss, change, Patchy



UU
3803X_d2a16a24-99c2-48d6-9eae-0b7b58d8eb97_20230929_111310_253.jpg, 00:07:31, 44.62 m
Connection defective at 10 o'clock, 225mm dia, Half blocked with encrustation

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Section Pictures - 29/09/2023 - UU 3803X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
12	Upstream	UU 3803X	N Kirton	NRC WWS Ltd



UU
3803X_3ca19a47-249f-40ed-abcb-2825530696c9_20230929_
111346_245.jpg, 00:08:06, 45.40 m
Connection other than junction at 3 o'clock, 300mm dia

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Section Inspection - 02/10/2023 - U/SX

WEB PROJECT CLICK TO OPEN THIS SECTION

Item No.	Insp. No.	Date:	Time:	Client`s Job Ref	Weather	Pre Cleaned	PLR
13	1	02/10/23	11:13	N Kirton	No Rain Or Snow	Yes	U/SX

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
ROBBIE DAVIN	PJ210MA	Pushrod	Not Specified	Private Drain	Not Specified

Town or Village:	Adana	**Inspection Direction:**	Upstream	**Upstream Node:**	U/S
Road:	Hammerstone Rd	**Inspected Length:**	7.74 m	**Upstream Pipe Depth:**	
Location:	Property or buildings	**Total Length:**	7.74 m	**Downstream Node:**	MH1A
Surface Type:	Asphalt Highway	**Joint Length:**		**Downstream Pipe Depth:**	1.070 m

Use:	Culverted watercourse	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	150 mm
Flow Control:	No flow control	**Pipe Material:**	Polyvinyl chloride
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Sample condition survey	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:68



Position [m]	Code	Observation	MPEG	Photo	Grade
0.00	MH	Start node, manhole, reference: MH1A	00:00:00		
0.00	WL	Water level, 10% of the vertical dimension	00:00:05		
7.74	XP	Collapsed drain or sewer, 95% cross-sectional area loss	00:01:23	U_SX_551 ced77-908 5-490f-9a3	5
7.74	SA	Survey abandoned: Pipe collapsed, broken pipe and full bore concrete	00:01:46		

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
1	165.0	21.3	165.0	5.0	0	0.0	0.0	0.0	1.0

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Section Pictures - 02/10/2023 - U/SX

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
13	Upstream	U/SX	N Kirton	NRC WWS Ltd



U_SX_551ced77-9085-490f-9a3d-03c1825fe094_20231002_111536_088.jpg, 00:01:23, 7.74 m
Collapsed drain or sewer, 95% cross-sectional area loss

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Section Inspection - 04/10/2023 - RWPX

WEB PROJECT CLICK TO OPEN THIS SECTION

Item No.	Insp. No.	Date:	Time:	Client`s Job Ref	Weather	Pre Cleaned	PLR
14	1	04/10/23	8:34	DK0526 ADANA CONSTRUCTION	Rain	Yes	RWPX

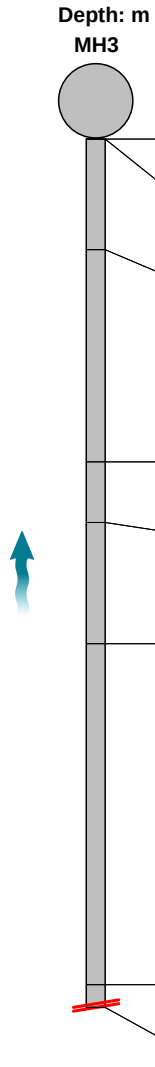
Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
ROBBIE DAVIN	Not Specified	Solo	Not Specified	Not Specified	1

Town or Village:	Gorton, Manchester	**Inspection Direction:**	Upstream	**Upstream Node:**	RWP
Road:	1 Hammerstone Road	**Inspected Length:**	12.15 m	**Upstream Pipe Depth:**	
Location:	Property or buildings	**Total Length:**	12.15 m	**Downstream Node:**	MH3
Surface Type:		**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	100 mm
Flow Control:	No flow control	**Pipe Material:**	Polyvinyl chloride
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Sample condition survey	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:106



Position [m]	Code	Observation	MPEG	Photo	Grade
0.00	MH	Start node, manhole, reference: MH3	00:00:00		
0.00	WL	Water level, 5% of the vertical dimension	00:00:00		
1.55	D	Deformed sewer or drain, 15%	00:00:12	MH3 US RWP_1-5 5m_08353	
4.52	D	Deformed sewer or drain, 10%	00:00:25	MH3 US RWP_4-5 2m_08355	
5.37	LL	Line deviates left	00:00:31		
7.06	D	Deformed sewer or drain, 10%	00:00:39	MH3 US RWP_7-0 6m_08362	
11.83	LU	Line deviates up	00:00:59		
12.15	SA	Survey abandoned: RWP MISSING OFF WALL	00:01:02	MH3 US RWP_12-15m_0837	

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0

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Section Pictures - 04/10/2023 - RWPX

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
14	Upstream	RWPX	DK0526 ADANA	NRC WWS LTD



MH3 US RWP_1-55m_083539.jpg, 00:00:12, 1.55 m
Deformed sewer or drain, 15%



MH3 US RWP_4-52m_083557.jpg, 00:00:25, 4.52 m
Deformed sewer or drain, 10%



MH3 US RWP_7-06m_083620.jpg, 00:00:39, 7.06 m
Deformed sewer or drain, 10%



MH3 US RWP_12-15m_083706.jpg, 00:01:02, 12.15 m
Survey abandoned, RWP MISSING OFF WALL

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Section Inspection - 04/10/2023 - ACOX

WEB PROJECT CLICK TO OPEN THIS SECTION

Item No.	Insp. No.	Date:	Time:	Client`s Job Ref	Weather	Pre Cleaned	PLR
15	1	04/10/23	8:38	DK0526 ADANA CONSTRUCTION	Rain	Yes	ACOX

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
ROBBIE DAVIN	Not Specified	Solo	Not Specified	Not Specified	1

Town or Village:	Gorton, Manchester	**Inspection Direction:**	Upstream	**Upstream Node:**	ACO
Road:	1 Hammerstone Road	**Inspected Length:**	15.02 m	**Upstream Pipe Depth:**	
Location:	Property or buildings	**Total Length:**	15.21 m	**Downstream Node:**	MH3
Surface Type:		**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	100 mm
Flow Control:	No flow control	**Pipe Material:**	Vitrified clay
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Sample condition survey	**Lining Material:**	No Lining

Comments:
Recommendations:



Scale: 1:132 Position [m]	Code	Observation	MPEG	Photo	Grade
Depth: m					
MH3 0.00	MH	Start node, manhole, reference: MH3	00:00:00		
0.00	WL	Water level, 5% of the vertical dimension	00:00:01		
9.49	JDM	Joint displaced, medium	00:00:41	MH3 US ACO_9-49 m_083943	
10.69	FM	Fractures, multiple at 12 o'clock	00:00:48	MH3 US ACO_10-6 9m_08395	
10.69	B	Broken pipe at 12 o'clock	00:00:50		
10.69	D	Deformed sewer or drain, 20%	00:00:51		
12.04	JDL	Joint displaced, large	00:01:08	MH3 US ACO_12-0 4m_08403	
13.56	LL	Line deviates left	00:01:17		
13.93	JDL	Joint displaced, large	00:01:23	MH3 US ACO_13-9 3m_08410	
13.93	MCPVC	Pipe material changes to polyvinyl chloride at this point	00:01:25		
14.16	JN	Junction at 9 o'clock, 100mm dia	00:01:29		
14.55	MCVC	Pipe material changes to vitrified clay at this point	00:01:35		
14.55	LL	Line deviates left	00:01:36		
15.00	LL	Line deviates left	00:01:41		
ACO 15.02	GYF	Finish node, gully, reference: ACO GULLY	00:01:48		
Depth: m					

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0

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Section Pictures - 04/10/2023 - ACOX

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
15	Upstream	ACOX	DK0526 ADANA	NRC WWS LTD



MH3 US ACO_9-49m_083943.jpg, 00:00:41, 9.49 m
Joint displaced, medium



MH3 US ACO_10-69m_083959.jpg, 00:00:48, 10.69 m
Fractures, multiple at 12 o'clock



MH3 US ACO_12-04m_084036.jpg, 00:01:08, 12.04 m
Joint displaced, large



MH3 US ACO_13-93m_084102.jpg, 00:01:23, 13.93 m
Joint displaced, large

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Section Inspection - 03/10/2023 - GULLYX

WEB PROJECT CLICK TO OPEN THIS SECTION

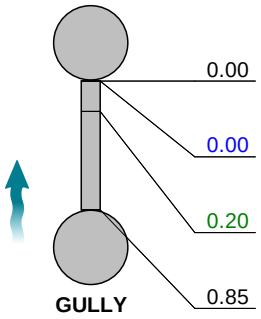
Item No.	Insp. No.	Date:	Time:	Client`s Job Ref	Weather	Pre Cleaned	PLR
16	1	03/10/23	14:07	DK0526 ADANA CONSTRUCTION	Rain	Yes	GULLYX

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
ROBBIE DAVIN	Not Specified	Solo	Not Specified	Not Specified	1

Town or Village:	Gorton, Manchester	**Inspection Direction:**	Upstream	**Upstream Node:**	GULLY
Road:	1 Hammerstone Road	**Inspected Length:**	0.85 m	**Upstream Pipe Depth:**	
Location:	Property or buildings	**Total Length:**	0.85 m	**Downstream Node:**	MH3
Surface Type:		**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	100 mm
Flow Control:	No flow control	**Pipe Material:**	Vitrified clay
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Sample condition survey	**Lining Material:**	No Lining

Comments:
Recommendations:



Scale: 1:50 Position [m]	Code	Observation	MPEG	Photo	Grade
0.00	MH	Start node, manhole, reference: MH3	00:00:00		
0.00	WL	Water level, 5% of the vertical dimension	00:00:01		
0.20	LU	Line deviates up	00:00:05		
0.85	GYF	Finish node, gully, reference: GULLY	00:00:20		

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0

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Section Inspection - 03/10/2023 - GULLYX

WEB PROJECT CLICK TO OPEN THIS SECTION

Item No.	Insp. No.	Date:	Time:	Client`s Job Ref	Weather	Pre Cleaned	PLR
17	1	03/10/23	14:10	DK0526 ADANA CONSTRUCTION	Rain	Yes	GULLYX

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
ROBBIE DAVIN	Not Specified	Solo	Not Specified	Not Specified	1

Town or Village:	Gorton, Manchester	**Inspection Direction:**	Upstream	**Upstream Node:**	GULLY
Road:	1 Hammerstone Road	**Inspected Length:**	6.55 m	**Upstream Pipe Depth:**	
Location:	Property or buildings	**Total Length:**	6.55 m	**Downstream Node:**	MH4
Surface Type:		**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	100 mm
Flow Control:	No flow control	**Pipe Material:**	Vitrified clay
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Sample condition survey	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:57



Position [m]	Code	Observation	MPEG	Photo	Grade
0.00	MH	Start node, manhole, reference: MH4	00:00:00		
0.00	WL	Water level, 10% of the vertical dimension	00:00:01		
0.30	FMJ	Fractures, multiple at joint from 8 o'clock to 5 o'clock	00:00:04	MH4 US GULLY_0-30m_1410	
1.77	WL	Water level, 20% of the vertical dimension	00:00:16		
6.55	GYF	Finish node, gully, reference: GULLY	00:00:33		

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0

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Section Pictures - 03/10/2023 - GULLYX

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
17	Upstream	GULLYX	DK0526 ADANA	NRC WWS LTD



MH4 US GULLY_0-30m_141058.jpg, 00:00:04, 0.30 m
Fractures, multiple at joint from 8 o'clock to 5 o'clock

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Section Inspection - 03/10/2023 - MH3X

WEB PROJECT CLICK TO OPEN THIS SECTION

Item No.	Insp. No.	Date:	Time:	Client`s Job Ref	Weather	Pre Cleaned	PLR
18	1	03/10/23	14:01	DK0526 ADANA CONSTRUCTION	Rain	Yes	MH3X

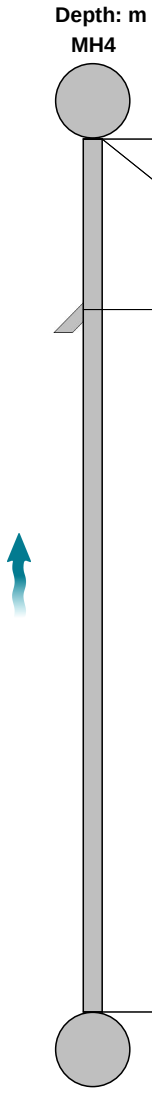
Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
ROBBIE DAVIN	Not Specified	Solo	Not Specified	Not Specified	1

Town or Village:	Gorton, Manchester	**Inspection Direction:**	Upstream	**Upstream Node:**	MH3
Road:	1 Hammerstone Road	**Inspected Length:**	22.35 m	**Upstream Pipe Depth:**	
Location:	Property or buildings	**Total Length:**	22.35 m	**Downstream Node:**	MH4
Surface Type:		**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	100 mm
Flow Control:	No flow control	**Pipe Material:**	Vitrified clay
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Sample condition survey	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:194



Position [m]	Code	Observation	MPEG	Photo	Grade
0.00	MH	Start node, manhole, reference: MH4	00:00:00		
0.00	WL	Water level, 10% of the vertical dimension	00:00:01		
4.38	JN	Junction at 1 o'clock, 100mm dia: GULLY NEXT TO MOBILE OFFICE	00:00:17		
22.35	MHF	Finish node, manhole, reference: MH3	00:01:10		

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0

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Section Inspection - 04/10/2023 - INTERCEPTOR MHX

WEB PROJECT CLICK TO OPEN THIS SECTION

Item No.	Insp. No.	Date:	Time:	Client`s Job Ref	Weather	Pre Cleaned	PLR
19	1	04/10/23	8:16	DK0526 ADANA CONSTRUCTION	Rain	Yes	INTERCEPTOR MHX

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
ROBBIE DAVIN	Not Specified	Solo	Not Specified	Not Specified	1

Town or Village:	Gorton, Manchester	**Inspection Direction:**	Upstream	**Upstream Node:**	INTERCEPTOR MH
Road:	1 Hammerstone Road	**Inspected Length:**	16.61 m	**Upstream Pipe Depth:**	
Location:	Property or buildings	**Total Length:**	16.61 m	**Downstream Node:**	MH4A
Surface Type:		**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	150 mm
Flow Control:	No flow control	**Pipe Material:**	Vitrified clay
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Sample condition survey	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:144	Position [m]	Code	Observation	MPEG	Photo	Grade
Depth: m MH4A						
	0.00	MH	Start node, manhole, reference: MH4A	00:00:00		
	0.00	WL	Water level, 5% of the vertical dimension	00:00:00		
	9.92	JN	Junction at 3 o'clock, 100mm dia	00:00:38		
	16.61	OCF	Finish node, other special chamber, reference: INTERCEPTOR MH: INT MH WASH DOWN AREA	00:01:02	MH4A US INTERCEPTOR	
INTERCEPTOR MI Depth: m						

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0

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Section Pictures - 04/10/2023 - INTERCEPTOR MHX

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
19	Upstream	INTERCEPTOR MHX	DK0526 ADANA	NRC WWS LTD



MH4A US INTERCEPTOR MH_16-61m_081913.jpg, 00:01:02, 16.61 m
Finish node, other special chamber, reference:
INTERCEPTOR MH, INT MH WASH DOWN AREA

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Section Inspection - 04/10/2023 - MH7X

WEB PROJECT CLICK TO OPEN THIS SECTION

Item No.	Insp. No.	Date:	Time:	Client`s Job Ref	Weather	Pre Cleaned	PLR
20	1	04/10/23	8:20	DK0526 ADANA CONSTRUCTION	Rain	Yes	MH7X

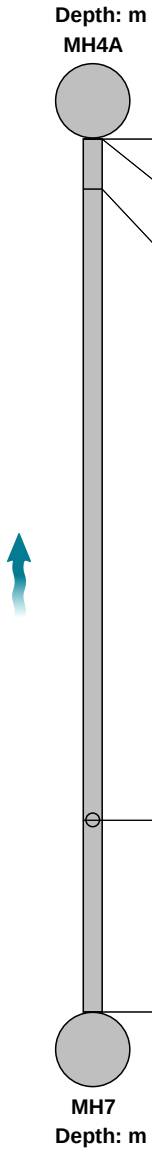
Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
ROBBIE DAVIN	Not Specified	Solo	Not Specified	Not Specified	1

Town or Village:	Gorton, Manchester	**Inspection Direction:**	Upstream	**Upstream Node:**	MH7
Road:	1 Hammerstone Road	**Inspected Length:**	19.93 m	**Upstream Pipe Depth:**	
Location:	Property or buildings	**Total Length:**	19.93 m	**Downstream Node:**	MH4A
Surface Type:		**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	100 mm
Flow Control:	No flow control	**Pipe Material:**	Vitrified clay
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Sample condition survey	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:173



Position [m]	Code	Observation	MPEG	Photo	Grade
0.00	MH	Start node, manhole, reference: MH4A	00:00:01		
0.00	WL	Water level, 10% of the vertical dimension	00:00:01		
1.15	LL	Line deviates left	00:00:09		
15.57	JN	Junction at 12 o'clock, 100mm dia: GULLY	00:00:56		
19.93	MHF	Finish node, manhole, reference: MH7: NO INLETS IN MH	00:01:17		

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0

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Section Inspection - 28/09/2023 - Line AX

WEB PROJECT CLICK TO OPEN THIS SECTION

Item No.	Insp. No.	Date:	Time:	Client`s Job Ref	Weather	Pre Cleaned	PLR
21	1	28/09/23	10:08	N Kirton	No Rain Or Snow	No	LINE AX

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
ROBBIE DAVIN	PJ210MA	Crawler	Not Specified	Private Drain	Not Specified

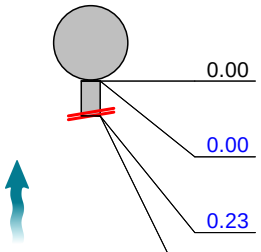
Town or Village:	Adana	**Inspection Direction:**	Upstream	**Upstream Node:**	LINE A
Road:	Hammerstone Rd	**Inspected Length:**	0.23 m	**Upstream Pipe Depth:**	
Location:	Property or buildings	**Total Length:**	0.23 m	**Downstream Node:**	MH5
Surface Type:	Asphalt Highway	**Joint Length:**		**Downstream Pipe Depth:**	5.150 m

Use:	Culverted watercourse	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	750 mm
Flow Control:	No flow control	**Pipe Material:**	Brick
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Sample condition survey	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:50

Depth: 5.15 m
MH5



Position [m]	Code	Observation	MPEG	Photo	Grade
0.00	MH	Start node, manhole, reference: MH5	00:00:00		
0.00	WL	Water level, 10% of the vertical dimension	00:00:06		
0.23	REM	General remark: General MH survey	00:00:24	Line AX_e91a9475-7b4e-	
0.23	SA	Survey abandoned: Visual of line entering MH - Line A	00:01:16		

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
0	0.0	0.0	0.0	1.0	0	0.0	0.0	0.0	1.0

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Section Pictures - 28/09/2023 - Line AX

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
21	Upstream	LINE AX	N Kirton	NRC WWS Ltd



Line
AX_e91a9475-7b4e-47fb-a422-8ee038e079f9_20230928_100927_614.jpg, 00:00:24, 0.23 m
General remark, General MH survey



Line
AX_8e7aa481-461d-44bb-8f15-7b653cb4fe82_20230928_100930_894.jpg, 00:00:24, 0.23 m
General remark, General MH survey

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Section Inspection - 03/10/2023 - MH4AX

WEB PROJECT CLICK TO OPEN THIS SECTION

Item No.	Insp. No.	Date:	Time:	Client`s Job Ref	Weather	Pre Cleaned	PLR
22	1	03/10/23	14:17	DK0526 ADANA CONSTRUCTION	Rain	Yes	MH4AX

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
ROBBIE DAVIN	Not Specified	Solo	Not Specified	Not Specified	1

Town or Village:	Gorton, Manchester	**Inspection Direction:**	Downstream	**Upstream Node:**	MH4A
Road:	1 Hammerstone Road	**Inspected Length:**	5.65 m	**Upstream Pipe Depth:**	
Location:	Property or buildings	**Total Length:**	5.65 m	**Downstream Node:**	MH5
Surface Type:		**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	100 mm
Flow Control:	No flow control	**Pipe Material:**	Vitrified clay
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Sample condition survey	**Lining Material:**	No Lining

Comments: MH4A NOT ON PLAN
Recommendations:

Scale: 1:50	Position [m]	Code	Observation	MPEG	Photo	Grade
Depth: m MH4A						
	0.00	MH	Start node, manhole, reference: MH4A	00:00:00		
	0.00	WL	Water level, 20% of the vertical dimension	00:00:00		
	1.88	OBZJ	Other obstacles at joint from 10 o'clock to 3 o'clock, 5% cross-sectional area loss: PLASTIC	00:00:11	MH4A DS MH5_1-88 m_141855	
	5.65	MHF	Finish node, manhole, reference: MH5: CULVERT MH	00:00:33	MH4A DS MH5_5-65 m_141930	
MH5 Depth: m						

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0

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Section Pictures - 03/10/2023 - MH4AX

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
22	Downstream	MH4AX	DK0526 ADANA	NRC WWS LTD



MH4A DS MH5_1-88m_141855.jpg, 00:00:11, 1.88 m
Other obstacles at joint from 10 o'clock to 3 o'clock, 5% cross-sectional area loss, PLASTIC



MH4A DS MH5_5-65m_141930.jpg, 00:00:33, 5.65 m
Finish node, manhole, reference: MH5, CULVERT MH

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Section Inspection - 29/09/2023 - MH1X

WEB PROJECT CLICK TO OPEN THIS SECTION

Item No.	Insp. No.	Date:	Time:	Client`s Job Ref	Weather	Pre Cleaned	PLR
23	2	29/09/23	8:22	N Kirton	No Rain Or Snow	Yes	MH1X

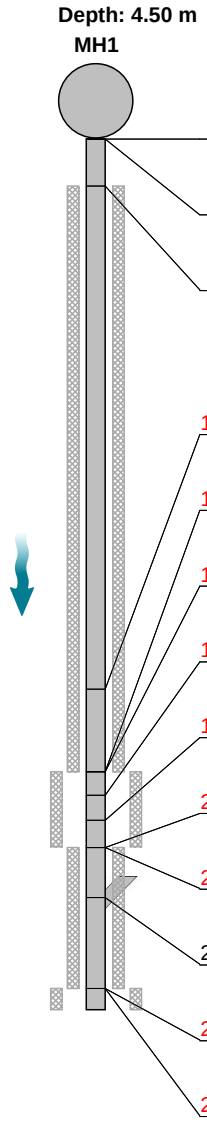
Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
ROBBIE DAVIN	PJ210MA	Crawler	Not Specified	Private Drain	Not Specified

Town or Village:	Adana	**Inspection Direction:**	Downstream	**Upstream Node:**	MH1
Road:	Hammerstone Rd	**Inspected Length:**	27.77 m	**Upstream Pipe Depth:**	4.500 m
Location:	Property or buildings	**Total Length:**	60.00 m	**Downstream Node:**	MH5
Surface Type:	Asphalt Highway	**Joint Length:**		**Downstream Pipe Depth:**	5.150 m

Use:	Culverted watercourse	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	750 mm
Flow Control:	No flow control	**Pipe Material:**	Concrete
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Sample condition survey	**Lining Material:**	No Lining

Comments: Overlap as jet wont go through debris coming upstream
Recommendations:

Scale: 1:219



Position [m]		Code	Observation	MPEG	Photo	Grade
0.00		MH	Start node, manhole, reference: MH1	00:00:00		
0.00		WL	Water level, 10% of the vertical dimension	00:00:07		
1.37	S01	FL	Fracture, longitudinal at 12 o'clock, start	00:00:36	MH1X_e8ddb24d-3b20-4023-af	
15.92		FL	Fracture, longitudinal at 7 o'clock	00:02:43	MH1X_57c3ec85-d13d-4d4f-ba5	3 / 2
18.30	F01	FL	Fracture, longitudinal at 12 o'clock, finish	00:03:29		3 / 2
18.30	S02	FL	Fracture, longitudinal at 2 o'clock, start	00:03:37	MH1X_c2594daa-fcaf-402d-bd6	
18.98		FC	Fracture, circumferential from 3 o'clock to 9 o'clock	00:04:16	MH1X_b6fec33a-22d3-4af2-983	3 / 2
19.71		FM	Fractures, multiple from 11 o'clock to 2 o'clock	00:04:34	MH1X_56c66650-3221-4101-b6	4 / 2
20.48	F02	FL	Fracture, longitudinal at 2 o'clock, finish	00:04:57		3 / 2
20.48	S03	FM	Fractures, multiple from 12 o'clock to 12 o'clock, start	00:05:06	MH1X_e097ea5e-e366-4a2c-9	
21.93		CN	Connection other than junction at 9 o'clock, 150mm dia	00:05:56		
24.56	F03	FM	Fractures, multiple from 12 o'clock to 12 o'clock, finish	00:06:47		4 / 2
24.56	S04	FL	Fracture, longitudinal at 12 o'clock, start	00:06:57	MH1X_3d9dbc05-6e24-48b4-b	

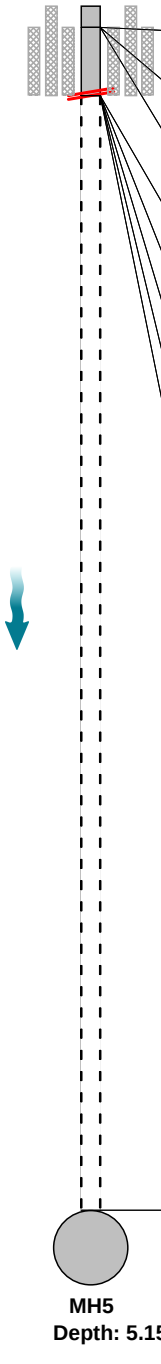
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Section Inspection - 29/09/2023 - MH1X

WEB PROJECT CLICK TO OPEN THIS SECTION

Item No.	Insp. No.	Date:	Time:	Client`s Job Ref	Weather	Pre Cleaned	PLR
23	2	29/09/23	8:22	N Kirton	No Rain Or Snow	Yes	MH1X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
ROBBIE DAVIN	PJ210MA	Crawler	Not Specified	Private Drain	Not Specified



Scale: 1:219

Position [m]		Code	Observation	MPEG	Photo	Grade
25.80	S05	DEC	Settled deposits, hard or compacted, 15% cross-sectional area loss, start	00:07:36		
25.80		WL	Water level, 20% of the vertical dimension	00:07:39		
25.80	S06	DES	Settled deposits, fine, 10% cross-sectional area loss, start	00:07:46		
27.77	F04	FL	Fracture, longitudinal at 12 o'clock, finish	00:08:16		3 / 2
27.77	F06	DES	Settled deposits, fine, 10% cross-sectional area loss, finish	00:08:27		3
27.77	F05	DEC	Settled deposits, hard or compacted, 15% cross-sectional area loss, finish	00:08:35		3
27.77		DEC	Settled deposits, hard or compacted, 40% cross-sectional area loss: Bricks/rubble	00:09:04	MH1X_0bc624e5-c3b6-449d-b8	4
27.77		SA	Survey abandoned: Jetting required & Man entry	00:09:25		
60.00			End of pipe			

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
7	200.0	25.3	1520.0	4.0	10	5.0	0.8	45.0	4.0

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Section Pictures - 29/09/2023 - MH1X

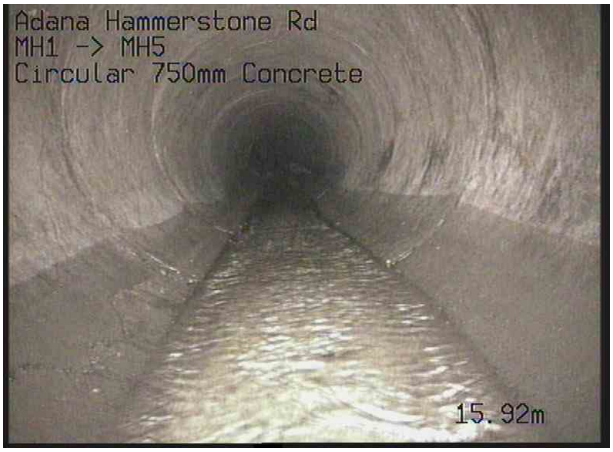
Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
23	Downstream	MH1X	N Kirton	NRC WWS Ltd



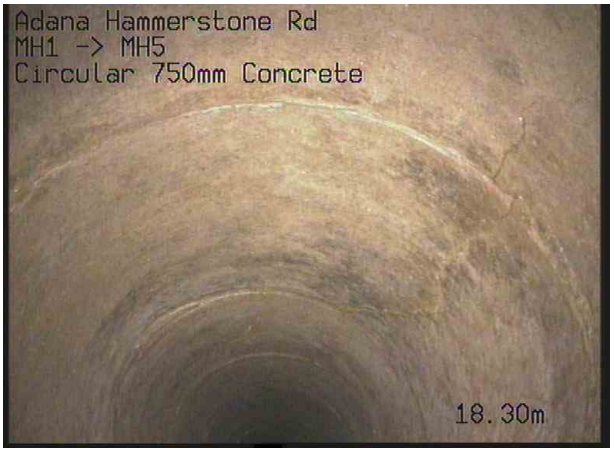
MH1X_e8ddb24d-3b20-4023-afa7-0dde4b1c943f_20230929_082331_720.jpg, 00:00:36, 1.37 m
Fracture, longitudinal at 12 o'clock, start



MH1X_3c9c27db-fb99-4094-9bf2-97fcb271940e_20230929_082340_048.jpg, 00:00:36, 1.37 m
Fracture, longitudinal at 12 o'clock, start



MH1X_57c3ec85-d13d-4d4f-ba57-254ecc38816c_20230929_082539_013.jpg, 00:02:43, 15.92 m
Fracture, longitudinal at 7 o'clock



MH1X_c2594daa-fcaf-402d-bd67-0043181de174_20230929_082633_141.jpg, 00:03:37, 18.30 m
Fracture, longitudinal at 2 o'clock, start

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Section Pictures - 29/09/2023 - MH1X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
23	Downstream	MH1X	N Kirton	NRC WWS Ltd



MH1X_b6fec33a-22d3-4af2-9836-bf00c744b5a6_20230929_082711_786.jpg, 00:04:16, 18.98 m
Fracture, circumferential from 3 o'clock to 9 o'clock



MH1X_56c66650-3221-4101-b6ba-7d3f042609b4_20230929_082729_854.jpg, 00:04:34, 19.71 m
Fractures, multiple from 11 o'clock to 2 o'clock



MH1X_e097ea5e-e366-4a2c-9436-68de88a165e2_20230929_082822_672.jpg, 00:05:06, 20.48 m
Fractures, multiple from 12 o'clock to 12 o'clock, start

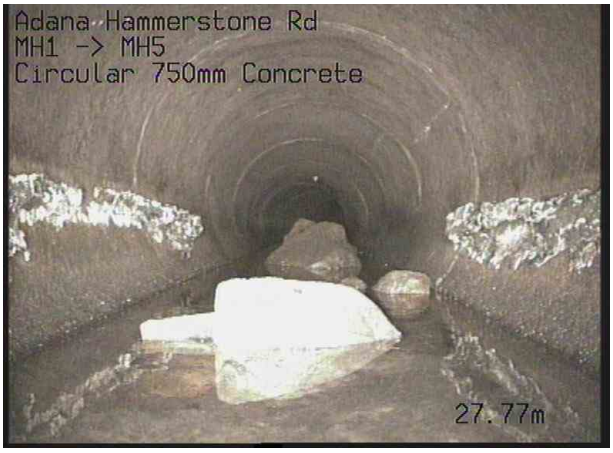


MH1X_3d9dbc05-6e24-48b4-bd28-cb39d0947a73_20230929_082952_988.jpg, 00:06:57, 24.56 m
Fracture, longitudinal at 12 o'clock, start

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Section Pictures - 29/09/2023 - MH1X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
23	Downstream	MH1X	N Kirton	NRC WWS Ltd



MH1X_0bc624e5-c3b6-449d-b80d-909b61ccf2e0_20230929_083200_349.jpg, 00:09:04, 27.77 m
Settled deposits, hard or compacted, 40% cross-sectional area loss, Bricks/rubble

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Section Inspection - 28/09/2023 - MH1X

WEB PROJECT CLICK TO OPEN THIS SECTION

Item No.	Insp. No.	Date:	Time:	Client`s Job Ref	Weather	Pre Cleaned	PLR
23	1	28/09/23	14:40	N Kirton	No Rain Or Snow	Yes	MH1X

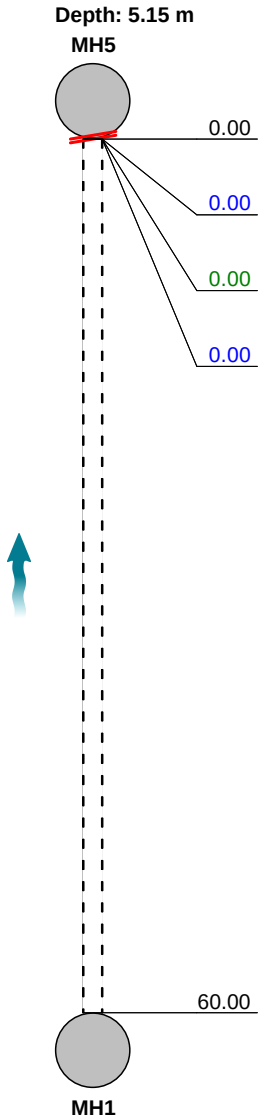
Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
ROBBIE DAVIN	PJ210MA	Crawler	Not Specified	Private Drain	Not Specified

Town or Village:	Adana	**Inspection Direction:**	Upstream	**Upstream Node:**	MH1
Road:	Hammerstone Rd	**Inspected Length:**	0.00 m	**Upstream Pipe Depth:**	4.500 m
Location:	Property or buildings	**Total Length:**	60.00 m	**Downstream Node:**	MH5
Surface Type:	Asphalt Highway	**Joint Length:**		**Downstream Pipe Depth:**	5.150 m

Use:	Culverted watercourse	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	750 mm
Flow Control:	No flow control	**Pipe Material:**	Concrete
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Sample condition survey	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:520



Position [m]	Code	Observation	MPEG	Photo	Grade
0.00	MH	Start node, manhole, reference: MH5: Cleaning progress	00:00:00		
0.00	WL	Water level, 20% of the vertical dimension	00:00:22		
0.00	DEC	Settled deposits, hard or compacted, 40% cross-sectional area loss: Rocks & Bricks ahead	00:01:02	MH1X_1e4fff8e-f462-4aec-b3d	4
0.00	SA	Survey abandoned: Further cleaning required	00:01:15		
60.00		End of pipe			

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
0	0.0	0.0	0.0	1.0	1	5.0	0.1	5.0	4.0

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Section Pictures - 28/09/2023 - MH1X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
23	Upstream	MH1X	N Kirton	NRC WWS Ltd



MH1X_1e4fff8e-f462-4aec-b3d1-adf4e246590f_20230928_144150_540.jpg, 00:01:02, 0.00 m
Settled deposits, hard or compacted, 40% cross-sectional area loss, Rocks & Bricks ahead

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Section Inspection - 03/10/2023 - MH4X

WEB PROJECT CLICK TO OPEN THIS SECTION

Item No.	Insp. No.	Date:	Time:	Client`s Job Ref	Weather	Pre Cleaned	PLR
24	1	03/10/23	14:12	DK0526 ADANA CONSTRUCTION	Rain	Yes	MH4X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
ROBBIE DAVIN	Not Specified	Solo	Not Specified	Not Specified	1

Town or Village:	Gorton, Manchester	**Inspection Direction:**	Downstream	**Upstream Node:**	MH4
Road:	1 Hammerstone Road	**Inspected Length:**	17.14 m	**Upstream Pipe Depth:**	
Location:	Property or buildings	**Total Length:**	17.14 m	**Downstream Node:**	MH5
Surface Type:		**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	100 mm
Flow Control:	No flow control	**Pipe Material:**	Vitrified clay
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Sample condition survey	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:149



Position [m]		Code	Observation	MPEG	Photo	Grade
0.00		MH	Start node, manhole, reference: MH4	00:00:00		
0.00		WL	Water level, 20% of the vertical dimension	00:00:00		
2.93		JN	Junction at 10 o'clock, 100mm dia	00:00:13		
7.02		WL	Water level, 30% of the vertical dimension	00:00:27		
8.23	S01	CUW	Loss of vision, camera under water, start	00:00:34		
13.11	F01	CUW	Loss of vision, camera under water, finish	00:00:49		
13.13		WL	Water level, 20% of the vertical dimension	00:00:50		
16.69		JDM	Joint displaced, medium	00:01:10	MH4 DS MH5_16-6 9m_14155	
16.73		LL	Line deviates left	00:01:12		
17.14		MHF	Finish node, manhole, reference: MH4A: UNCHARTED MH	00:02:08	MH4 DS MH5_17-1 4m_14171	

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0

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Section Pictures - 03/10/2023 - MH4X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
24	Downstream	MH4X	DK0526 ADANA	NRC WWS LTD



MH4 DS MH5_16-69m_141551.jpg, 00:01:10, 16.69 m
Joint displaced, medium



MH4 DS MH5_17-14m_141711.jpg, 00:02:08, 17.14 m
Finish node, manhole, reference: MH4A, UNCHARTED MH

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Section Inspection - 04/10/2023 - MH16X

WEB PROJECT CLICK TO OPEN THIS SECTION

Item No.	Insp. No.	Date:	Time:	Client`s Job Ref	Weather	Pre Cleaned	PLR
25	21	04/10/23	8:56	DK0526 ADANA CONSTRUCTION	Rain	Yes	MH16X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
ROBBIE DAVIN	Not Specified	Solo	Not Specified	Not Specified	1

Town or Village:	Gorton, Manchester	**Inspection Direction:**	Downstream	**Upstream Node:**	MH16
Road:	1 Hammerstone Road	**Inspected Length:**	21.11 m	**Upstream Pipe Depth:**	
Location:	Property or buildings	**Total Length:**	21.11 m	**Downstream Node:**	MH15
Surface Type:		**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	100 mm
Flow Control:	No flow control	**Pipe Material:**	Polyvinyl chloride
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Sample condition survey	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:183

Position [m]	Code	Observation	MPEG	Photo	Grade
Depth: m					
MH16					
0.00	IC	Start node, inspection chamber, reference: MH16	00:00:00		
0.00	WL	Water level, 5% of the vertical dimension	00:00:00		
21.11	ICF	Finish node, inspection chamber, reference: MH15: IC INSTALLED AGAINST FLOW	00:01:12		
MH15					
Depth: m					

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0

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Section Inspection - 04/10/2023 - ROD EYEX

WEB PROJECT CLICK TO OPEN THIS SECTION

Item No.	Insp. No.	Date:	Time:	Client`s Job Ref	Weather	Pre Cleaned	PLR
26	1	04/10/23	9:16	DK0526 ADANA CONSTRUCTION	Rain	Yes	ROD EYEX

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
ROBBIE DAVIN	Not Specified	Solo	Not Specified	Not Specified	1

Town or Village:	Gorton, Manchester	**Inspection Direction:**	Upstream	**Upstream Node:**	ROD EYE
Road:	1 Hammerstone Road	**Inspected Length:**	7.67 m	**Upstream Pipe Depth:**	
Location:	Property or buildings	**Total Length:**	7.67 m	**Downstream Node:**	MH16
Surface Type:		**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	100 mm
Flow Control:	No flow control	**Pipe Material:**	Polyvinyl chloride
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Sample condition survey	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:67



Position [m]	Code	Observation	MPEG	Photo	Grade
0.00	IC	Start node, inspection chamber, reference: MH16	00:00:00		
0.00	WL	Water level, 5% of the vertical dimension	00:00:01		
0.00	LR	Line deviates right	00:00:03		
5.08	JN	Junction at 10 o'clock, 100mm dia	00:00:21		
6.68	LU	Line deviates up	00:00:29		
7.67	REF	Finish node, rodding eye, reference: ROD EYE: NO CAP ON RE	00:00:34	MH16 US ROD EYE_7-67	

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0

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Section Pictures - 04/10/2023 - ROD EYEX

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
26	Upstream	ROD EYEX	DK0526 ADANA	NRC WWS LTD



MH16 US ROD EYE_7-67m_091805.jpg, 00:00:34, 7.67 m
Finish node, rodding eye, reference: ROD EYE, NO CAP ON RE

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Section Inspection - 03/10/2023 - MH16X

WEB PROJECT CLICK TO OPEN THIS SECTION

Item No.	Insp. No.	Date:	Time:	Client`s Job Ref	Weather	Pre Cleaned	PLR
27	1	03/10/23	9:10	DK0526 ADANA CONSTRUCTION	Rain	Yes	MH16X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
ROBBIE DAVIN	Not Specified	Solo	Not Specified	Not Specified	1

Town or Village:	Gorton, Manchester	**Inspection Direction:**	Upstream	**Upstream Node:**	MH16
Road:	1 Hammerstone Road	**Inspected Length:**	8.23 m	**Upstream Pipe Depth:**	
Location:	Property or buildings	**Total Length:**	8.23 m	**Downstream Node:**	MH17
Surface Type:		**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	100 mm
Flow Control:	No flow control	**Pipe Material:**	Polyvinyl chloride
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Sample condition survey	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:72



Position [m]	Code	Observation	MPEG	Photo	Grade
0.00	IC	Start node, inspection chamber, reference: MH17	00:00:00		
0.00	WL	Water level, 5% of the vertical dimension	00:00:01		
8.23	ICF	Finish node, inspection chamber, reference: MH16	00:00:22		

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0

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Section Inspection - 03/10/2023 - MH17X

WEB PROJECT CLICK TO OPEN THIS SECTION

Item No.	Insp. No.	Date:	Time:	Client`s Job Ref	Weather	Pre Cleaned	PLR
28	1	03/10/23	9:41	DK0526 ADANA CONSTRUCTION	Rain	Yes	MH17X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
ROBBIE DAVIN	Not Specified	Solo	Not Specified	Not Specified	1

Town or Village:	Gorton, Manchester	**Inspection Direction:**	Downstream	**Upstream Node:**	MH17
Road:	1 Hammerstone Road	**Inspected Length:**	12.77 m	**Upstream Pipe Depth:**	
Location:	Property or buildings	**Total Length:**	12.77 m	**Downstream Node:**	MH18
Surface Type:		**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	100 mm
Flow Control:	No flow control	**Pipe Material:**	Polyvinyl chloride
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Sample condition survey	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:111



Position [m]	Code	Observation	MPEG	Photo	Grade
0.00	IC	Start node, inspection chamber, reference: MH17	00:00:00		
0.00	WL	Water level, 5% of the vertical dimension	00:00:01		
0.30	LL	Line deviates left	00:00:06		
12.45	LL	Line deviates left	00:00:37		
12.77	ICF	Finish node, inspection chamber, reference: MH18: DIP IN CHAMBER	00:00:47	MH17 DS MH18_12-77m_0942	

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0

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Section Pictures - 03/10/2023 - MH17X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
28	Downstream	MH17X	DK0526 ADANA	NRC WWS LTD



MH17 DS MH18_12-77m_094242.jpg, 00:00:47, 12.77 m
Finish node, inspection chamber, reference: MH18, DIP IN CHAMBER

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Section Inspection - 03/10/2023 - GULLYX

WEB PROJECT CLICK TO OPEN THIS SECTION

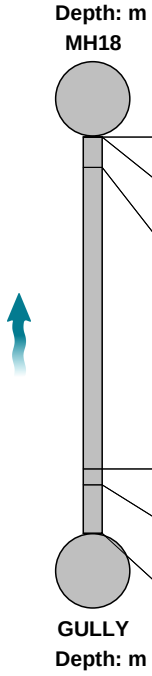
Item No.	Insp. No.	Date:	Time:	Client`s Job Ref	Weather	Pre Cleaned	PLR
29	1	03/10/23	10:00	DK0526 ADANA CONSTRUCTION	Rain	Yes	GULLYX

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
ROBBIE DAVIN	Not Specified	Solo	Not Specified	Not Specified	1

Town or Village:	Gorton, Manchester	**Inspection Direction:**	Upstream	**Upstream Node:**	GULLY
Road:	1 Hammerstone Road	**Inspected Length:**	2.62 m	**Upstream Pipe Depth:**	
Location:	Property or buildings	**Total Length:**	2.62 m	**Downstream Node:**	MH18
Surface Type:		**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	100 mm
Flow Control:	No flow control	**Pipe Material:**	Polyvinyl chloride
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Sample condition survey	**Lining Material:**	No Lining

Comments:
Recommendations:



Scale: 1:50 Position [m]	Code	Observation	MPEG	Photo	Grade
0.00	MH	Start node, manhole, reference: MH18	00:00:00		
0.00	WL	Water level, 5% of the vertical dimension	00:00:00		
0.20	LR	Line deviates right	00:00:03		
2.19	JDL	Joint displaced, large	00:00:14	MH18 US GULLY_2-19m_1001	
2.30	LL	Line deviates left	00:00:17		
2.62	GYF	Finish node, gully, reference: GULLY	00:00:21		

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0

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Section Pictures - 03/10/2023 - GULLYX

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
29	Upstream	GULLYX	DK0526 ADANA	NRC WWS LTD



MH18 US GULLY_2-19m_100123.jpg, 00:00:14, 2.19 m
Joint displaced, large

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Section Inspection - 03/10/2023 - MH18X

WEB PROJECT CLICK TO OPEN THIS SECTION

Item No.	Insp. No.	Date:	Time:	Client`s Job Ref	Weather	Pre Cleaned	PLR
30	1	03/10/23	9:43	DK0526 ADANA CONSTRUCTION	Rain	Yes	MH18X

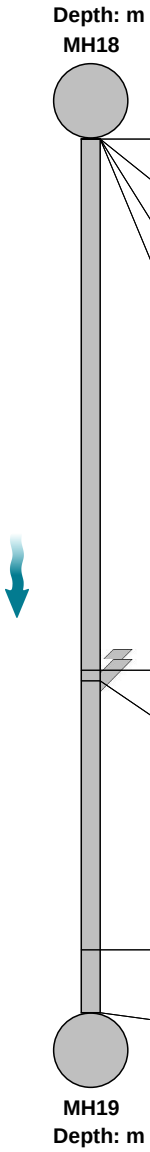
Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
ROBBIE DAVIN	Not Specified	Solo	Not Specified	Not Specified	1

Town or Village:	Gorton, Manchester	**Inspection Direction:**	Downstream	**Upstream Node:**	MH18
Road:	1 Hammerstone Road	**Inspected Length:**	18.68 m	**Upstream Pipe Depth:**	
Location:	Property or buildings	**Total Length:**	18.68 m	**Downstream Node:**	MH19
Surface Type:		**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	100 mm
Flow Control:	No flow control	**Pipe Material:**	Vitrified clay
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Sample condition survey	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:162



Position [m]	Code	Observation	MPEG	Photo	Grade
0.00	IC	Start node, inspection chamber, reference: MH18	00:00:00		
0.00	WL	Water level, 5% of the vertical dimension	00:00:00		
0.00	IC	Start node, inspection chamber, reference: MH18	00:00:00		
0.00	WL	Water level, 5% of the vertical dimension	00:00:01		
11.36	JN	Junction at 9 o'clock, 100mm dia	00:00:35		
11.59	JN	Junction at 9 o'clock, 100mm dia	00:00:38		
17.35	WL	Water level, 20% of the vertical dimension	00:00:54		
18.68	MHF	Finish node, manhole, reference: MH19	00:01:15		

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0

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Section Inspection - 03/10/2023 - GULLYX

WEB PROJECT CLICK TO OPEN THIS SECTION

Item No.	Insp. No.	Date:	Time:	Client`s Job Ref	Weather	Pre Cleaned	PLR
31	1	03/10/23	10:11	DK0526 ADANA CONSTRUCTION	Rain	Yes	GULLYX

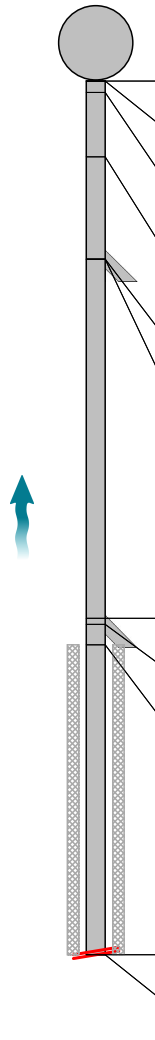
Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
ROBBIE DAVIN	Not Specified	Solo	Not Specified	Not Specified	1

Town or Village:	Gorton, Manchester	**Inspection Direction:**	Upstream	**Upstream Node:**	GULLY
Road:	1 Hammerstone Road	**Inspected Length:**	21.68 m	**Upstream Pipe Depth:**	
Location:	Property or buildings	**Total Length:**	21.68 m	**Downstream Node:**	MH19
Surface Type:		**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	100 mm
Flow Control:	No flow control	**Pipe Material:**	Vitrified clay
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Sample condition survey	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:188



Position [m]		Code	Observation	MPEG	Photo	Grade
0.00		MH	Start node, manhole, reference: MH19	00:00:00		
0.00		WL	Water level, 5% of the vertical dimension	00:00:01		
0.30		LR	Line deviates right	00:00:07		
1.89		JDM	Joint displaced, medium	00:00:16	MH19 US GULLY_1-89m_1012	
4.43		JN	Junction at 10 o'clock, 100mm dia	00:00:29		
4.43		WL	Water level, 10% of the vertical dimension	00:00:31		
13.34		WL	Water level, 40% of the vertical dimension	00:01:04		
13.49		JN	Junction at 10 o'clock, 100mm dia	00:01:10		
13.99	S01	CUW	Loss of vision, camera under water, start	00:01:17		
21.68	F01	CUW	Loss of vision, camera under water, finish	00:02:15		
21.68		SA	Survey abandoned: CUW AND NO VISUAL	00:02:17		

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0

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Section Pictures - 03/10/2023 - GULLYX

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
31	Upstream	GULLYX	DK0526 ADANA	NRC WWS LTD



MH19 US GULLY_1-89m_101245.jpg, 00:00:16, 1.89 m
Joint displaced, medium

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Section Inspection - 03/10/2023 - GULLYX

WEB PROJECT CLICK TO OPEN THIS SECTION

Item No.	Insp. No.	Date:	Time:	Client`s Job Ref	Weather	Pre Cleaned	PLR
32	1	03/10/23	10:11	DK0526 ADANA CONSTRUCTION	Rain	Yes	GULLYX

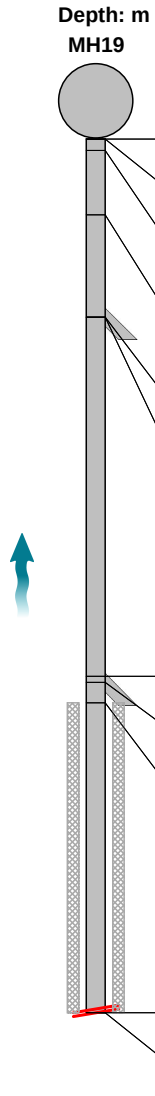
Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
ROBBIE DAVIN	Not Specified	Solo	Not Specified	Not Specified	1

Town or Village:	Gorton, Manchester	**Inspection Direction:**	Upstream	**Upstream Node:**	GULLY
Road:	1 Hammerstone Road	**Inspected Length:**	21.68 m	**Upstream Pipe Depth:**	
Location:	Property or buildings	**Total Length:**	21.68 m	**Downstream Node:**	MH19
Surface Type:		**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	100 mm
Flow Control:	No flow control	**Pipe Material:**	Vitrified clay
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Sample condition survey	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:188



Position [m]		Code	Observation	MPEG	Photo	Grade
0.00		MH	Start node, manhole, reference: MH19	00:00:00		
0.00		WL	Water level, 5% of the vertical dimension	00:00:01		
0.30		LR	Line deviates right	00:00:07		
1.89		JDM	Joint displaced, medium	00:00:16	MH19 US GULLY_1-89m_1012	
4.43		JN	Junction at 10 o'clock, 100mm dia	00:00:29		
4.43		WL	Water level, 10% of the vertical dimension	00:00:31		
13.34		WL	Water level, 40% of the vertical dimension	00:01:04		
13.49		JN	Junction at 10 o'clock, 100mm dia	00:01:10		
13.99	S01	CUW	Loss of vision, camera under water, start	00:01:17		
21.68	F01	CUW	Loss of vision, camera under water, finish	00:02:15		
21.68		SA	Survey abandoned: CUW AND NO VISUAL	00:02:17		

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0

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Section Pictures - 03/10/2023 - GULLYX

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
32	Upstream	GULLYX	DK0526 ADANA	NRC WWS LTD



MH19 US GULLY_1-89m_101245.jpg, 00:00:16, 1.89 m
Joint displaced, medium

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Section Inspection - 03/10/2023 - MH19X

WEB PROJECT CLICK TO OPEN THIS SECTION

Item No.	Insp. No.	Date:	Time:	Client`s Job Ref	Weather	Pre Cleaned	PLR
33	1	03/10/23	9:55	DK0526 ADANA CONSTRUCTION	Rain	Yes	MH19X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
ROBBIE DAVIN	Not Specified	Solo	Not Specified	Not Specified	1

Town or Village:	Gorton, Manchester	**Inspection Direction:**	Downstream	**Upstream Node:**	MH19
Road:	1 Hammerstone Road	**Inspected Length:**	9.54 m	**Upstream Pipe Depth:**	
Location:	Property or buildings	**Total Length:**	9.52 m	**Downstream Node:**	MH20
Surface Type:		**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	100 mm
Flow Control:	No flow control	**Pipe Material:**	Vitrified clay
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Sample condition survey	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:83



Position [m]	Code	Observation	MPEG	Photo	Grade
-0.02	MH	Start node, manhole, reference: MH19	00:00:00		
-0.02	WL	Water level, 10% of the vertical dimension	00:00:00		
5.52	WL	Water level, 20% of the vertical dimension	00:00:16		
7.51	WL	Water level, 5% of the vertical dimension: DIP	00:00:25		
9.52	MHF	Finish node, manhole, reference: MH28: VT Incorrect	00:00:33		

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
0	0.0	0.0	0.0	1.0	0	0.0	0.0	0.0	1.0

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Section Inspection - 04/10/2023 - USX

WEB PROJECT CLICK TO OPEN THIS SECTION

Item No.	Insp. No.	Date:	Time:	Client`s Job Ref	Weather	Pre Cleaned	PLR
34	1	04/10/23	10:05	DK0526 ADANA CONSTRUCTION	Rain	Yes	USX

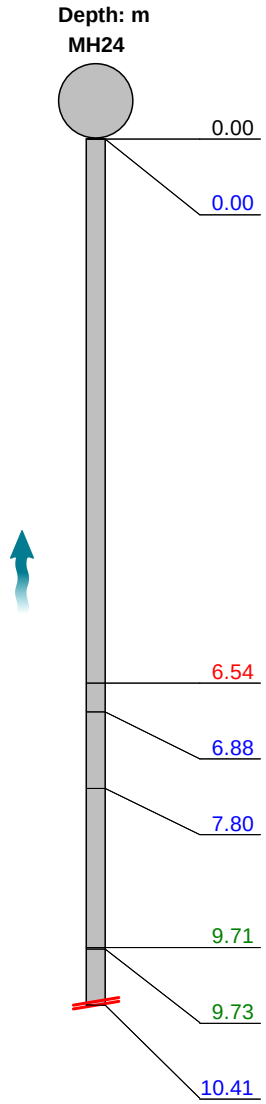
Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
ROBBIE DAVIN	Not Specified	Solo	Not Specified	Not Specified	1

Town or Village:	Gorton, Manchester	**Inspection Direction:**	Upstream	**Upstream Node:**	US
Road:	1 Hammerstone Road	**Inspected Length:**	10.41 m	**Upstream Pipe Depth:**	
Location:	Property or buildings	**Total Length:**	10.41 m	**Downstream Node:**	MH24
Surface Type:		**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Combined	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	100 mm
Flow Control:	No flow control	**Pipe Material:**	Vitrified clay
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Sample condition survey	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:91



Position [m]	Code	Observation	MPEG	Photo	Grade
0.00	MH	Start node, manhole, reference: MH24	00:00:00		
0.00	WL	Water level, 5% of the vertical dimension	00:00:00		
6.54	FCJ	Fracture, circumferential at joint at 12 o'clock	00:00:35	MH24 US_6-54m _100726.j	
6.88	WL	Water level, 20% of the vertical dimension	00:00:50		
7.80	WL	Water level, 5% of the vertical dimension	00:01:06		
9.71	LU	Line deviates up	00:01:15		
9.73	LR	Line deviates right	00:01:14		
10.41	SA	Survey abandoned: UNABLE TO PASS BENDS	00:01:26	MH24 US_10-41 m_100850	

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0

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Section Pictures - 04/10/2023 - USX

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
34	Upstream	USX	DK0526 ADANA	NRC WWS LTD



MH24 US_6-54m_100726.jpg, 00:00:35, 6.54 m
Fracture, circumferential at joint at 12 o'clock



MH24 US_10-41m_100850.jpg, 00:01:26, 10.41 m
Survey abandoned, UNABLE TO PASS BENDS

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Section Inspection - 04/10/2023 - RWGX

WEB PROJECT CLICK TO OPEN THIS SECTION

Item No.	Insp. No.	Date:	Time:	Client`s Job Ref	Weather	Pre Cleaned	PLR
35	1	04/10/23	10:09	DK0526 ADANA CONSTRUCTION	Rain	Yes	RWGX

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
ROBBIE DAVIN	Not Specified	Solo	Not Specified	Not Specified	1

Town or Village:	Gorton, Manchester	**Inspection Direction:**	Upstream	**Upstream Node:**	RWG
Road:	1 Hammerstone Road	**Inspected Length:**	2.21 m	**Upstream Pipe Depth:**	
Location:	Property or buildings	**Total Length:**	2.21 m	**Downstream Node:**	MH24
Surface Type:		**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	100 mm
Flow Control:	No flow control	**Pipe Material:**	Vitrified clay
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Sample condition survey	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:50



Position [m]	Code	Observation	MPEG	Photo	Grade
0.00	MH	Start node, manhole, reference: MH24	00:00:00		
0.00	WL	Water level, 5% of the vertical dimension	00:00:00		
0.20	LU	Line deviates up	00:00:05		
2.21	GYF	Finish node, gully, reference: RWG	00:00:24		

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0

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Section Inspection - 04/10/2023 - FWIC1X

WEB PROJECT CLICK TO OPEN THIS SECTION

Item No.	Insp. No.	Date:	Time:	Client`s Job Ref	Weather	Pre Cleaned	PLR
36	29	04/10/23	10:43	DK0526 ADANA CONSTRUCTION	Rain	Yes	FWIC1X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
ROBBIE DAVIN	Not Specified	Solo	Not Specified	Not Specified	1

Town or Village:	Gorton, Manchester	**Inspection Direction:**	Downstream	**Upstream Node:**	FWIC1
Road:	1 Hammerstone Road	**Inspected Length:**	7.51 m	**Upstream Pipe Depth:**	
Location:	Property or buildings	**Total Length:**	7.51 m	**Downstream Node:**	MH25
Surface Type:		**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Foul	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	100 mm
Flow Control:	No flow control	**Pipe Material:**	Polyvinyl chloride
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Sample condition survey	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:66



Position [m]	Code	Observation	MPEG	Photo	Grade
0.00	IC	Start node, inspection chamber, reference: FWIC1	00:00:00		
0.00	WL	Water level, 10% of the vertical dimension	00:00:00		
6.19	WL	Water level, 20% of the vertical dimension: DIP	00:00:27	FWIC1 DS MH25_6-1 9m_10450	
7.21	WL	Water level, 10% of the vertical dimension	00:00:36		
7.21	LL	Line deviates left	00:00:36		
7.21	LD	Line deviates down	00:00:36		
7.51	MHF	Finish node, manhole, reference: MH25	00:00:39		

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0

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Section Pictures - 04/10/2023 - FWIC1X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
36	Downstream	FWIC1X	DK0526 ADANA	NRC WWS LTD



FWIC1 DS MH25_6-19m_104500.jpg, 00:00:27, 6.19 m
Water level, 20% of the vertical dimension, DIP

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Section Inspection - 04/10/2023 - USX

WEB PROJECT CLICK TO OPEN THIS SECTION

Item No.	Insp. No.	Date:	Time:	Client`s Job Ref	Weather	Pre Cleaned	PLR
37	1	04/10/23	10:17	DK0526 ADANA CONSTRUCTION	Rain	Yes	USX

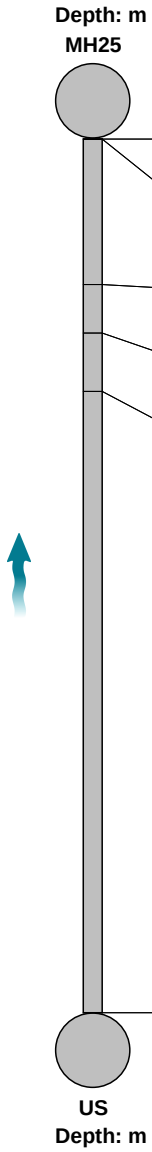
Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
ROBBIE DAVIN	Not Specified	Solo	Not Specified	Not Specified	1

Town or Village:	Gorton, Manchester	**Inspection Direction:**	Upstream	**Upstream Node:**	US
Road:	1 Hammerstone Road	**Inspected Length:**	24.33 m	**Upstream Pipe Depth:**	
Location:	Property or buildings	**Total Length:**	24.33 m	**Downstream Node:**	MH25
Surface Type:		**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Foul	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	150 mm
Flow Control:	No flow control	**Pipe Material:**	Vitrified clay
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Sample condition survey	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:211



Position [m]	Code	Observation	MPEG	Photo	Grade
0.00	MH	Start node, manhole, reference: MH25	00:00:00		
0.00	WL	Water level, 5% of the vertical dimension	00:00:01		
4.07	MH	Start node, manhole, reference: UNDER CABIN	00:00:16		
5.41	LR	Line deviates right: OUT OF MH	00:00:25		
7.04	WL	Water level, 20% of the vertical dimension	00:00:35		
24.33	MHF	Finish node, manhole, reference: US UTL	00:01:47	MH25 US_24-33 m_102353	

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0

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Section Pictures - 04/10/2023 - USX

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
37	Upstream	USX	DK0526 ADANA	NRC WWS LTD



MH25 US_24-33m_102353.jpg, 00:01:47, 24.33 m
Finish node, manhole, reference: US UTL

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Section Inspection - 03/10/2023 - USX

WEB PROJECT CLICK TO OPEN THIS SECTION

Item No.	Insp. No.	Date:	Time:	Client`s Job Ref	Weather	Pre Cleaned	PLR
38	1	03/10/23	10:33	DK0526 ADANA CONSTRUCTION	Rain	Yes	USX

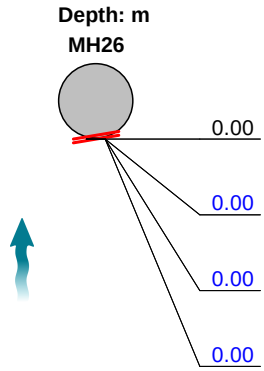
Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
ROBBIE DAVIN	Not Specified	Solo	Not Specified	Not Specified	1

Town or Village:	Gorton, Manchester	**Inspection Direction:**	Upstream	**Upstream Node:**	US
Road:	1 Hammerstone Road	**Inspected Length:**	0.00 m	**Upstream Pipe Depth:**	
Location:	Property or buildings	**Total Length:**	0.00 m	**Downstream Node:**	MH26
Surface Type:		**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	150 mm
Flow Control:	No flow control	**Pipe Material:**	Vitrified clay
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Sample condition survey	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:50



Position [m]	Code	Observation	MPEG	Photo	Grade
0.00	MH	Start node, manhole, reference: MH26	00:00:01		
0.00	WL	Water level, 5% of the vertical dimension	00:00:01		
0.00	REM	General remark: CAPPED	00:00:02	MH26 US_0-00m _103515.j	
0.00	SA	Survey abandoned: LINE CAPPED	00:00:05		

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0

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Section Pictures - 03/10/2023 - USX

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
38	Upstream	USX	DK0526 ADANA	NRC WWS LTD



MH26 US_0-00m_103515.jpg, 00:00:02, 0.00 m
General remark, CAPPED

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Section Inspection - 03/10/2023 - MH28X

WEB PROJECT CLICK TO OPEN THIS SECTION

Item No.	Insp. No.	Date:	Time:	Client`s Job Ref	Weather	Pre Cleaned	PLR
39	1	03/10/23	10:18	DK0526 ADANA CONSTRUCTION	Rain	Yes	MH28X

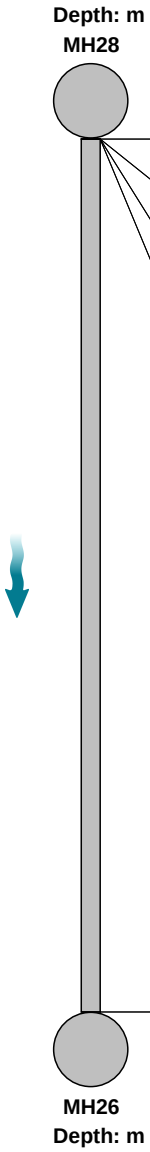
Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
ROBBIE DAVIN	Not Specified	Solo	Not Specified	Not Specified	1

Town or Village:	Gorton, Manchester	**Inspection Direction:**	Downstream	**Upstream Node:**	MH28
Road:	1 Hammerstone Road	**Inspected Length:**	18.67 m	**Upstream Pipe Depth:**	
Location:	Property or buildings	**Total Length:**	18.67 m	**Downstream Node:**	MH26
Surface Type:		**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	150 mm
Flow Control:	No flow control	**Pipe Material:**	Cast iron
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Sample condition survey	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:162



Position [m]	Code	Observation	MPEG	Photo	Grade
0.00	MH	Start node, manhole, reference: MH28	00:00:00		
0.00	WL	Water level, 5% of the vertical dimension	00:00:01		
0.00	MH	Start node, manhole, reference: MH28	00:00:01		
0.00	WL	Water level, 5% of the vertical dimension	00:00:02		
18.67	MHF	Finish node, manhole, reference: MH26	00:01:26		

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0

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Section Inspection - 03/10/2023 - MH26X

WEB PROJECT CLICK TO OPEN THIS SECTION

Item No.	Insp. No.	Date:	Time:	Client`s Job Ref	Weather	Pre Cleaned	PLR
40	1	03/10/23	10:36	DK0526 ADANA CONSTRUCTION	Rain	Yes	MH26X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
ROBBIE DAVIN	Not Specified	Solo	Not Specified	Not Specified	1

Town or Village:	Gorton, Manchester	**Inspection Direction:**	Downstream	**Upstream Node:**	MH26
Road:	1 Hammerstone Road	**Inspected Length:**	15.66 m	**Upstream Pipe Depth:**	
Location:	Property or buildings	**Total Length:**	15.66 m	**Downstream Node:**	MH27
Surface Type:		**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	150 mm
Flow Control:	No flow control	**Pipe Material:**	Vitrified clay
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Sample condition survey	**Lining Material:**	No Lining

Comments: MH27 UTR
Recommendations:

Scale: 1:136

Position [m]	Code	Observation	MPEG	Photo	Grade
		Depth: m			
		MH26			
0.00	MH	Start node, manhole, reference: MH26	00:00:00		
0.00	WL	Water level, 10% of the vertical dimension	00:00:00		
15.66	MHF	Finish node, manhole, reference: MH27: UTR REVERSE CCTV COMPLETED	00:01:43		
		MH27			
		Depth: m			

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0

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Section Inspection - 03/10/2023 - RWP BX

WEB PROJECT CLICK TO OPEN THIS SECTION

Item No.	Insp. No.	Date:	Time:	Client`s Job Ref	Weather	Pre Cleaned	PLR
41	1	03/10/23	10:24	DK0526 ADANA CONSTRUCTION	Rain	Yes	RWP BX

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
ROBBIE DAVIN	Not Specified	Solo	Not Specified	Not Specified	1

Town or Village:	Gorton, Manchester	**Inspection Direction:**	Upstream	**Upstream Node:**	RWP B
Road:	1 Hammerstone Road	**Inspected Length:**	15.65 m	**Upstream Pipe Depth:**	
Location:	Property or buildings	**Total Length:**	15.65 m	**Downstream Node:**	MH28
Surface Type:		**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	100 mm
Flow Control:	No flow control	**Pipe Material:**	Cast iron
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Sample condition survey	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:136



Position [m]	Code	Observation	MPEG	Photo	Grade
0.00	MH	Start node, manhole, reference: MH28	00:00:00		
0.00	WL	Water level, 5% of the vertical dimension	00:00:01		
15.65	LU	Line deviates up	00:01:40		
15.65	SA	Survey abandoned: RWP B	00:01:41	MH28 US RWP B_15-65m	

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0

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Section Pictures - 03/10/2023 - RWP BX

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
41	Upstream	RWP BX	DK0526 ADANA	NRC WWS LTD



MH28 US RWP B_15-65m_102753.jpg, 00:01:41, 15.65 m
Survey abandoned, RWP B

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Section Inspection - 03/10/2023 - RWP AX

WEB PROJECT CLICK TO OPEN THIS SECTION

Item No.	Insp. No.	Date:	Time:	Client`s Job Ref	Weather	Pre Cleaned	PLR
42	1	03/10/23	10:21	DK0526 ADANA CONSTRUCTION	Rain	Yes	RWP AX

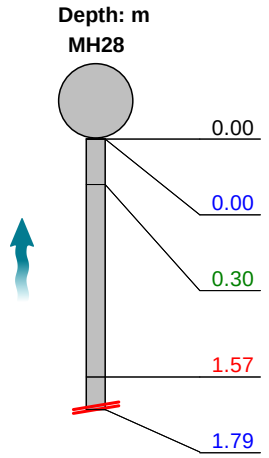
Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
ROBBIE DAVIN	Not Specified	Solo	Not Specified	Not Specified	1

Town or Village:	Gorton, Manchester	**Inspection Direction:**	Upstream	**Upstream Node:**	RWP A
Road:	1 Hammerstone Road	**Inspected Length:**	1.79 m	**Upstream Pipe Depth:**	
Location:	Property or buildings	**Total Length:**	1.79 m	**Downstream Node:**	MH28
Surface Type:		**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	100 mm
Flow Control:	No flow control	**Pipe Material:**	Vitrified clay
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Sample condition survey	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:50



Position [m]	Code	Observation	MPEG	Photo	Grade
0.00	MH	Start node, manhole, reference: MH28	00:00:01		
0.00	WL	Water level, 5% of the vertical dimension	00:00:02		
0.30	LU	Line deviates up	00:00:06		
1.57	OJM	Open joint, medium	00:00:32	MH28 US RWP A_1-57m_	
1.79	SA	Survey abandoned: UNABLE TO PUSH ON	00:00:46		

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0

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Section Pictures - 03/10/2023 - RWP AX

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
42	Upstream	RWP AX	DK0526 ADANA	NRC WWS LTD



MH28 US RWP A_1-57m_102307.jpg, 00:00:32, 1.57 m
Open joint, medium

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Section Inspection - 22/08/2023 - G1X

WEB PROJECT CLICK TO OPEN THIS SECTION

Item No.	Insp. No.	Date:	Time:	Client`s Job Ref	Weather	Pre Cleaned	PLR
43	1	22/08/23	14:32	Not Specified	No Rain Or Snow	Yes	G1X

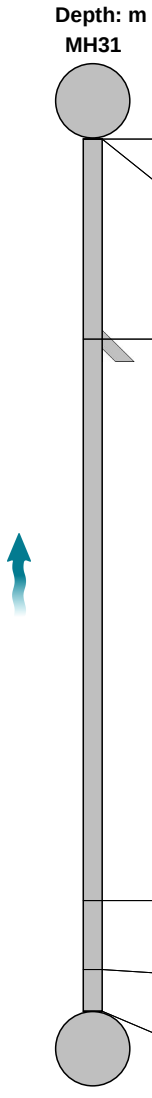
Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
D.MORRISON	PK20 Syx	Coiler	Not Specified	Not Specified	Not Specified

Town or Village:	Manchester	**Inspection Direction:**	Upstream	**Upstream Node:**	G1
Road:	Hammerstone Road	**Inspected Length:**	11.17 m	**Upstream Pipe Depth:**	
Location:	Road	**Total Length:**	11.17 m	**Downstream Node:**	MH31
Surface Type:	Concrete Footway	**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	100 mm
Flow Control:	No flow control	**Pipe Material:**	Vitrified clay
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Investment planning	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:97



Position [m]	Code	Observation	MPEG	Photo	Grade
0.00	MH	Start node, manhole, reference: MH31	00:00:00		
0.00	WL	Water level, 0% of the vertical dimension	00:00:02		
2.57	JN	Junction at 10 o'clock, 150mm dia	00:01:07		
9.75	LU	Line deviates up	00:01:53		
10.64	GYF	Finish node, gully, reference: G1	00:02:04		
11.17	LL	Line deviates left	00:02:02		

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
0	0.0	0.0	0.0	1.0	0	0.0	0.0	0.0	1.0

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Section Inspection - 22/08/2023 - G2X

WEB PROJECT CLICK TO OPEN THIS SECTION

Item No.	Insp. No.	Date:	Time:	Client`s Job Ref	Weather	Pre Cleaned	PLR
44	1	22/08/23	14:44	Not Specified	No Rain Or Snow	Yes	G2X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
D.MORRISON	PK20 Syx	Coiler	Not Specified	Not Specified	Not Specified

Town or Village:	Manchester	**Inspection Direction:**	Upstream	**Upstream Node:**	G2
Road:	Hammerstone Road	**Inspected Length:**	6.39 m	**Upstream Pipe Depth:**	
Location:	Road	**Total Length:**	6.39 m	**Downstream Node:**	MH32
Surface Type:	Concrete Footway	**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	150 mm
Flow Control:	No flow control	**Pipe Material:**	Vitrified clay
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Investment planning	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:56



Position [m]	Code	Observation	MPEG	Photo	Grade
0.00	MH	Start node, manhole, reference: MH32	00:00:00		
0.00	WL	Water level, 0% of the vertical dimension	00:00:01		
2.00	FCJ	Fracture, circumferential at joint from 12 o'clock to 12 o'clock: FROM HOLE	00:00:26	G2X_d3ff5865-e93a-4ec7-a84c	3 / 2
2.30	H	Hole in drain or sewer at 12 o'clock	00:00:23		4
2.30	B	Broken pipe from 4 o'clock to 8 o'clock	00:01:03	G2X_2be08d98-3f9c-4bdc-8a9a	4
2.30	D	Deformed sewer or drain, 10%	00:01:08	G2X_747da227-0512-4bbe-84f2	4 / 3
3.74	FLJ	Fracture, longitudinal at joint at 1 o'clock	00:01:49	G2X_ab06da00-461d-487a-906	3 / 2
4.59	LU	Line deviates up	00:02:02		
5.12	FC	Fracture, circumferential from 12 o'clock to 12 o'clock	00:02:07	G2X_7d0afabf-d9d6-4a7d-873b	3 / 2
6.39	GYF	Finish node, gully, reference: G2	00:02:21		

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
6	240.0	56.3	360.0	4.0	4	2.0	0.8	5.0	3.0

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Section Pictures - 22/08/2023 - G2X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
44	Upstream	G2X		DK0472



G2X_d3ff5865-e93a-4ec7-a84c-383277f4871d_20230822_144547_320.jpg, 00:00:26, 2.00 m
Fracture, circumferential at joint from 12 o'clock to 12 o'clock, FROM HOLE



G2X_2be08d98-3f9c-4bdc-8a9a-d6455144f56f_20230822_144653_113.jpg, 00:01:03, 2.30 m
Broken pipe from 4 o'clock to 8 o'clock



G2X_747da227-0512-4bbe-84f2-efa2331e3276_20230822_144655_798.jpg, 00:01:08, 2.30 m
Deformed sewer or drain, 10%



G2X_ab06da00-461d-487a-9062-864238af2135_20230822_144730_122.jpg, 00:01:49, 3.74 m
Fracture, longitudinal at joint at 1 o'clock

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Section Pictures - 22/08/2023 - G2X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
44	Upstream	G2X		DK0472



G2X_7d0afabf-d9d6-4a7d-873b-f683bedce10f_20230822_144819_634.jpg, 00:02:07, 5.12 m
Fracture, circumferential from 12 o'clock to 12 o'clock

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Section Inspection - 22/08/2023 - MH31X

WEB PROJECT CLICK TO OPEN THIS SECTION

Item No.	Insp. No.	Date:	Time:	Client`s Job Ref	Weather	Pre Cleaned	PLR
45	1	22/08/23	14:21	Not Specified	No Rain Or Snow	Yes	MH31X

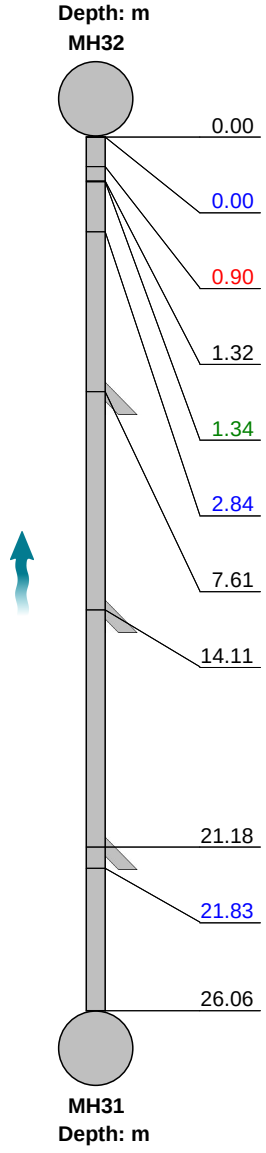
Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
D.MORRISON	PK20 Syx	Coiler	Not Specified	Not Specified	Not Specified

Town or Village:	Manchester	**Inspection Direction:**	Upstream	**Upstream Node:**	MH31
Road:	Hammerstone Road	**Inspected Length:**	26.06 m	**Upstream Pipe Depth:**	
Location:	Road	**Total Length:**	26.06 m	**Downstream Node:**	MH32
Surface Type:	Concrete Footway	**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	150 mm
Flow Control:	No flow control	**Pipe Material:**	Vitrified clay
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Investment planning	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:226



Position [m]	Code	Observation	MPEG	Photo	Grade
0.00	MH	Start node, manhole, reference: MH32	00:00:00		
0.00	WL	Water level, 5% of the vertical dimension			
0.90	FLJ	Fracture, longitudinal at joint at 11 o'clock	00:00:24	MH31X_5 6cae0d2-2 bc6-4c28-	3 / 2
1.32	SC	Pipe size changes, new size(s), 100mm high	00:01:15		
1.34	LR	Line deviates right	00:01:04		
2.84	WL	Water level, 10% of the vertical dimension	00:01:37		
7.61	JN	Junction at 10 o'clock, 150mm dia	00:02:10		
14.11	JN	Junction at 10 o'clock, 150mm dia	00:02:44		
21.18	JN	Junction at 10 o'clock, 150mm dia	00:03:18		
21.83	WL	Water level, 10% of the vertical dimension	00:03:20		
26.06	MHF	Finish node, manhole, reference: MH31	00:03:32		

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
1	40.0	1.5	40.0	3.0	1	1.0	0.0	1.0	2.0

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Section Pictures - 22/08/2023 - MH31X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
45	Upstream	MH31X		DK0472



MH31X_56cae0d2-2bc6-4c28-862c-216765a5cfea_20230822_142250_192.jpg, 00:00:24, 0.90 m
Fracture, longitudinal at joint at 11 o'clock



MH31X_a7e1bd3b-4274-4a7a-8eac-753dbce24893_20230822_142250_429.jpg, 00:00:24, 0.90 m
Fracture, longitudinal at joint at 11 o'clock

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Section Inspection - 22/08/2023 - MH32X

WEB PROJECT CLICK TO OPEN THIS SECTION

Item No.	Insp. No.	Date:	Time:	Client`s Job Ref	Weather	Pre Cleaned	PLR
46	1	22/08/23	12:37	Not Specified	No Rain Or Snow	Yes	MH32X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
D.MORRISON	PK20 Syx	Coiler	Not Specified	Not Specified	Not Specified

Town or Village:	Manchester	**Inspection Direction:**	Upstream	**Upstream Node:**	MH32
Road:	Hammerstone Road	**Inspected Length:**	9.97 m	**Upstream Pipe Depth:**	
Location:	Road	**Total Length:**	9.97 m	**Downstream Node:**	MH33
Surface Type:	Concrete Footway	**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	150 mm
Flow Control:	No flow control	**Pipe Material:**	Vitrified clay
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Investment planning	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:87



Position [m]	Code	Observation	MPEG	Photo	Grade
0.00	MH	Start node, manhole, reference: MH33	00:00:00		
0.00	WL	Water level, 5% of the vertical dimension	00:01:05		
0.30	JDL	Joint displaced, large	00:00:15	MH32X_2 4bb07b8-9 3c2-4e3b-	1 / 4
0.36	WL	Water level, 15% of the vertical dimension	00:00:36		
2.19	WL	Water level, 5% of the vertical dimension	00:00:46		
9.97	MHF	Finish node, manhole, reference: MH32	00:02:04		

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
1	2.0	0.2	2.0	1.0	1	5.0	0.5	5.0	4.0

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Section Pictures - 22/08/2023 - MH32X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
46	Upstream	MH32X		DK0472



MH32X_24bb07b8-93c2-4e3b-8492-e88e5f53e045_20230822_123855_790.jpg, 00:00:15, 0.30 m
Joint displaced, large

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Section Inspection - 22/08/2023 - MH33X

WEB PROJECT CLICK TO OPEN THIS SECTION

Item No.	Insp. No.	Date:	Time:	Client`s Job Ref	Weather	Pre Cleaned	PLR
47	1	22/08/23	12:30	Not Specified	No Rain Or Snow	Yes	MH33X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
D.MORRISON	PK20 Syx	Coiler	Not Specified	Not Specified	Not Specified

Town or Village:	Manchester	**Inspection Direction:**	Upstream	**Upstream Node:**	MH33
Road:	Hammerstone Road	**Inspected Length:**	15.26 m	**Upstream Pipe Depth:**	
Location:	Road	**Total Length:**	15.26 m	**Downstream Node:**	MH34
Surface Type:	Concrete Footway	**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	150 mm
Flow Control:	No flow control	**Pipe Material:**	Vitrified clay
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Investment planning	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:133



Position [m]	Code	Observation	MPEG	Photo	Grade
0.00	MH	Start node, manhole, reference: MH34	00:00:00		
0.00	WL	Water level, 10% of the vertical dimension	00:03:16		
2.97	WL	Water level, 20% of the vertical dimension	00:00:15		
5.53	WL	Water level, 100% of the vertical dimension	00:00:19		
5.53	CUW	Loss of vision, camera under water	00:00:21		
8.25	WL	Water level, 15% of the vertical dimension	00:00:33		
12.62	WL	Water level, 5% of the vertical dimension	00:00:47		
15.26	MHF	Finish node, manhole, reference: MH33	00:01:00		

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
0	0.0	0.0	0.0	1.0	0	0.0	0.0	0.0	1.0

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Section Inspection - 22/08/2023 - G5X

WEB PROJECT CLICK TO OPEN THIS SECTION

Item No.	Insp. No.	Date:	Time:	Client`s Job Ref	Weather	Pre Cleaned	PLR
48	1	22/08/23	15:13	Not Specified	No Rain Or Snow	Yes	G5X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
D.MORRISON	PK20 Syx	Coiler	Not Specified	Not Specified	Not Specified

Town or Village:	Manchester	**Inspection Direction:**	Upstream	**Upstream Node:**	G5
Road:	Hammerstone Road	**Inspected Length:**	6.25 m	**Upstream Pipe Depth:**	
Location:	Road	**Total Length:**	6.25 m	**Downstream Node:**	MH34
Surface Type:	Concrete Footway	**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	150 mm
Flow Control:	No flow control	**Pipe Material:**	Vitrified clay
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Investment planning	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:55



Position [m]	Code	Observation	MPEG	Photo	Grade
0.00	MH	Start node, manhole, reference: MH34	00:00:00		
0.00	WL	Water level, 0% of the vertical dimension	00:00:02		
5.32	LU	Line deviates up	00:00:22		
6.25	GYF	Finish node, gully, reference: G5: GULLY FULL REQUIRES ACCESS	00:00:32		

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
0	0.0	0.0	0.0	1.0	0	0.0	0.0	0.0	1.0

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Section Inspection - 22/08/2023 - MH1 INTERNX

WEB PROJECT CLICK TO OPEN THIS SECTION

Item No.	Insp. No.	Date:	Time:	Client`s Job Ref	Weather	Pre Cleaned	PLR
49	1	22/08/23	15:19	Not Specified	No Rain Or Snow	Yes	MH1 INTERNX

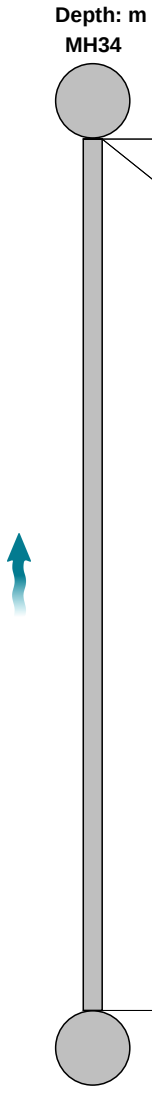
Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
D.MORRISON	PK20 Syx	Coiler	Not Specified	Not Specified	Not Specified

Town or Village:	Manchester	**Inspection Direction:**	Upstream	**Upstream Node:**	MH1 INTERN
Road:	Hammerstone Road	**Inspected Length:**	10.70 m	**Upstream Pipe Depth:**	
Location:	Road	**Total Length:**	10.70 m	**Downstream Node:**	MH34
Surface Type:	Concrete Footway	**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	100 mm
Flow Control:	No flow control	**Pipe Material:**	Vitrified clay
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Investment planning	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:93



Position [m]	Code	Observation	MPEG	Photo	Grade
0.00	MH	Start node, manhole, reference: MH34	00:00:00		
0.00	WL	Water level, 0% of the vertical dimension	00:00:01		
10.70	MHF	Finish node, manhole, reference: MH1 INTERN	00:00:54		

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
0	0.0	0.0	0.0	1.0	0	0.0	0.0	0.0	1.0

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Section Inspection - 22/08/2023 - G4X

WEB PROJECT CLICK TO OPEN THIS SECTION

Item No.	Insp. No.	Date:	Time:	Client`s Job Ref	Weather	Pre Cleaned	PLR
50	1	22/08/23	15:05	Not Specified	No Rain Or Snow	Yes	G4X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
D.MORRISON	PK20 Syx	Coiler	Not Specified	Not Specified	Not Specified

Town or Village:	Manchester	**Inspection Direction:**	Upstream	**Upstream Node:**	G4
Road:	Hammerstone Road	**Inspected Length:**	4.98 m	**Upstream Pipe Depth:**	
Location:	Road	**Total Length:**	4.98 m	**Downstream Node:**	MH34
Surface Type:	Concrete Footway	**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	125 mm
Flow Control:	No flow control	**Pipe Material:**	Vitrified clay
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Investment planning	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:50



Position [m]	Code	Observation	MPEG	Photo	Grade
0.00	MH	Start node, manhole, reference: MH34	00:00:00		
0.00	WL	Water level, 0% of the vertical dimension	00:00:01		
2.95	JDL	Joint displaced, large	00:00:49	G4X_9f5969be-001d-4340-b98	1 / 4
3.82	LU	Line deviates up	00:01:03		
4.98	GYF	Finish node, gully, reference: G4	00:01:12		

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
1	2.0	0.4	2.0	1.0	1	5.0	1.0	5.0	4.0

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Section Pictures - 22/08/2023 - G4X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
50	Upstream	G4X		DK0472



G4X_9f5969be-001d-4340-b98b-1ba644824653_20230822_150615_700.jpg, 00:00:49, 2.95 m
Joint displaced, large

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Section Inspection - 22/08/2023 - MH37X

WEB PROJECT CLICK TO OPEN THIS SECTION

Item No.	Insp. No.	Date:	Time:	Client`s Job Ref	Weather	Pre Cleaned	PLR
51	1	22/08/23	11:58	Not Specified	No Rain Or Snow	Yes	MH37X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
D.MORRISON	PK20 Syx	Coiler	Not Specified	Not Specified	Not Specified

Town or Village:	Manchester	**Inspection Direction:**	Downstream	**Upstream Node:**	MH37
Road:	Hammerstone Road	**Inspected Length:**	1.42 m	**Upstream Pipe Depth:**	
Location:	Road	**Total Length:**	1.42 m	**Downstream Node:**	MH36
Surface Type:	Concrete Footway	**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Foul	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	100 mm
Flow Control:	No flow control	**Pipe Material:**	Vitrified clay
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Investment planning	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:50

Depth: m
MH37



MH36
Depth: m

Position [m]	Code	Observation	MPEG	Photo	Grade
0.00	MH	Start node, manhole, reference: MH37	00:00:00		
0.00	WL	Water level, 10% of the vertical dimension	00:00:00		
0.91	JDL	Joint displaced, large: SEALING RING VISIBLE	00:00:24	MH37X_2 a16aa07-3 1ea-4574-	1 / 4
1.42	ICF	Finish node, inspection chamber, reference: MH36	00:00:55		

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
1	2.0	1.4	2.0	1.0	1	5.0	3.5	5.0	4.0

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Section Pictures - 22/08/2023 - MH37X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
51	Downstream	MH37X		DK0472



MH37X_2a16aa07-31ea-4574-9c90-f29b9d278d83_20230822_115907_537.jpg, 00:00:24, 0.91 m
Joint displaced, large, SEALING RING VISIBLE

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Section Inspection - 22/08/2023 - MH38X

WEB PROJECT CLICK TO OPEN THIS SECTION

Item No.	Insp. No.	Date:	Time:	Client`s Job Ref	Weather	Pre Cleaned	PLR
52	1	22/08/23	11:45	Not Specified	No Rain Or Snow	Yes	MH38X

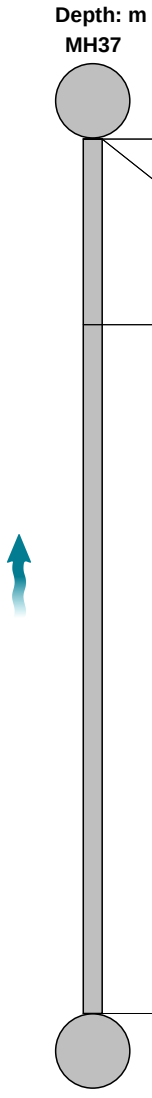
Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
D.MORRISON	PK20 Syx	Coiler	Not Specified	Not Specified	Not Specified

Town or Village:	Manchester	**Inspection Direction:**	Upstream	**Upstream Node:**	MH38
Road:	Hammerstone Road	**Inspected Length:**	12.35 m	**Upstream Pipe Depth:**	
Location:	Road	**Total Length:**	12.35 m	**Downstream Node:**	MH37
Surface Type:	Concrete Footway	**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Foul	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	100 mm
Flow Control:	No flow control	**Pipe Material:**	Vitrified clay
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Investment planning	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:107



Position [m]	Code	Observation	MPEG	Photo	Grade
0.00	MH	Start node, manhole, reference: MH36	00:03:28		
0.01	WL	Water level, 5% of the vertical dimension	00:00:00		
2.63	JDL	Joint displaced, large	00:00:37		1 / 4
12.35	MHF	Finish node, manhole, reference: MH38	00:01:39		

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
1	2.0	0.2	2.0	1.0	1	5.0	0.4	5.0	4.0

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Section Inspection - 06/10/2023 - U/SX

WEB PROJECT CLICK TO OPEN THIS SECTION

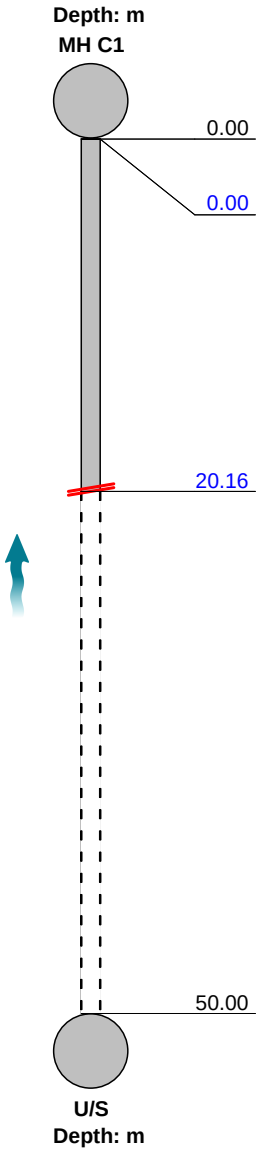
Item No.	Insp. No.	Date:	Time:	Client`s Job Ref	Weather	Pre Cleaned	PLR
53	1	06/10/23	10:14	N Kirton	No Rain Or Snow	Yes	U/SX

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
ROBBIE DAVIN	PJ210MA	Pushrod	Not Specified	Private Drain	Not Specified

Town or Village:	Adana	**Inspection Direction:**	Upstream	**Upstream Node:**	U/S
Road:	Hammerstone Rd	**Inspected Length:**	20.16 m	**Upstream Pipe Depth:**	
Location:	Property or buildings	**Total Length:**	50.00 m	**Downstream Node:**	MH C1
Surface Type:	Asphalt Highway	**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Combined	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	225 mm
Flow Control:	No flow control	**Pipe Material:**	Vitrified clay
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Sample condition survey	**Lining Material:**	No Lining

Comments: 150mm set up to pass CXI
Recommendations:



Scale: 1:433 Position [m]	Code	Observation	MPEG	Photo	Grade
0.00	MH	Start node, manhole, reference: MH C1	00:00:00		
0.00	WL	Water level, 5% of the vertical dimension	00:00:05		
20.16	SA	Survey abandoned: 150mm set up wedged under cxi	00:02:33		
50.00		End of pipe			

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
0	0.0	0.0	0.0	1.0	0	0.0	0.0	0.0	1.0

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Section Inspection - 29/09/2023 - FWMH02X

WEB PROJECT CLICK TO OPEN THIS SECTION

Item No.	Insp. No.	Date:	Time:	Client`s Job Ref	Weather	Pre Cleaned	PLR
54	1	29/09/23	12:44	N Kirton	No Rain Or Snow	Yes	FWMH02X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
ROBBIE DAVIN	PJ210MA	Crawler	Not Specified	Private Drain	Not Specified

Town or Village:	Adana	**Inspection Direction:**	Downstream	**Upstream Node:**	FWMH02
Road:	Hammerstone Rd	**Inspected Length:**	16.91 m	**Upstream Pipe Depth:**	5.050 m
Location:	Property or buildings	**Total Length:**	16.91 m	**Downstream Node:**	NEW MH
Surface Type:	Asphalt Highway	**Joint Length:**		**Downstream Pipe Depth:**	4.470 m

Use:	Combined	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	450 mm
Flow Control:	No flow control	**Pipe Material:**	Vitrified clay
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Sample condition survey	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:147



Position [m]		Code	Observation	MPEG	Photo	Grade
Depth: 5.05 m						
FWMH02 0.00		MH	Start node, manhole, reference: FWMH02: Hard standing in MH	00:00:00	FWMH02X_db9322b8-9ab3-4d	
0.00		WL	Water level, 20% of the vertical dimension	00:00:30		
0.76	S01	DEE	Attached deposits, encrustation from 7 o'clock to 5 o'clock, 5% cross-sectional area loss, start	00:01:26	FWMH02X_d2215c8f-f3bb-4127	
3.11		LR	Line deviates right	00:01:59		
3.26	S02	FL	Fracture, longitudinal at 12 o'clock, start	00:02:12	FWMH02X_d67fa18a-261f-42cc	
4.78	F02	FL	Fracture, longitudinal at 12 o'clock, finish	00:02:51		3 / 2
8.87		CN	Connection other than junction at 3 o'clock, 150mm dia	00:04:00		
9.68		DEC	Settled deposits, hard or compacted, 30% cross-sectional area loss: Concrete	00:04:32	FWMH02X_22d30264-c456-4a	4
11.54	S03	FL	Fracture, longitudinal at 12 o'clock, start	00:05:27	FWMH02X_633f7784-7216-437	
12.29		FL	Fracture, longitudinal at 6 o'clock	00:06:02	FWMH02X_f3b58675-fd07-4717	3 / 2
13.52	F03	FL	Fracture, longitudinal at 12 o'clock, finish	00:06:31		3 / 2
13.52		WL	Water level, 10% of the vertical dimension	00:06:35		
16.51		OBBJ	Other obstacles, brick or masonry in invert at joint from 5 o'clock to 6 o'clock, 10% cross-sectional area loss	00:07:37	FWMH02X_88bea82c-ac8f-4bd	5
16.91	F01	DEE	Attached deposits, encrustation from 7 o'clock to 5 o'clock, 5% cross-sectional area loss, finish	00:07:56		3
NEW MH 16.91		MHF	Finish node, manhole, reference: NEW MH	00:08:01		
Depth: 4.47 m						

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
3	80.0	11.8	200.0	3.0	6	12.0	3.2	54.0	5.0

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Section Pictures - 29/09/2023 - FWMH02X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
54	Downstream	FWMH02X	N Kirton	NRC WWS Ltd



FWMH02X_db9322b8-9ab3-4d4a-8258-9b1e2f5a8361_20230929_124453_432.jpg, 00:00:00, 0.00 m
Start node, manhole, reference: FWMH02, Hard standing in MH



FWMH02X_d2215c8f-f3bb-4127-9b8e-fde0659868d8_20230929_124600_242.jpg, 00:01:26, 0.76 m
Attached deposits, encrustation from 7 o'clock to 5 o'clock, 5% cross-sectional area loss, start



FWMH02X_d67fa18a-261f-42cc-b472-823572ada9df_20230929_124648_735.jpg, 00:02:12, 3.26 m
Fracture, longitudinal at 12 o'clock, start



FWMH02X_22d30264-c456-4ae7-aeda-8c7f10495bb9_20230929_124915_902.jpg, 00:04:32, 9.68 m
Settled deposits, hard or compacted, 30% cross-sectional area loss, Concrete

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Section Pictures - 29/09/2023 - FWMH02X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
54	Downstream	FWMH02X	N Kirton	NRC WWS Ltd



FWMH02X_633f7784-7216-4371-80bf-317db178d39e_20230929_125002_555.jpg, 00:05:27, 11.54 m
Fracture, longitudinal at 12 o'clock, start



FWMH02X_f3b58675-fd07-4717-8b15-d7f2aa510cb6_20230929_125036_729.jpg, 00:06:02, 12.29 m
Fracture, longitudinal at 6 o'clock



FWMH02X_88bea82c-ac8f-4bd6-ad0a-3f201e129369_20230929_125210_984.jpg, 00:07:37, 16.51 m
Other obstacles, brick or masonry in invert at joint from 5 o'clock to 6 o'clock, 10% cross-sectional area loss

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Section Inspection - 29/06/2023 - EXMH06X

WEB PROJECT CLICK TO OPEN THIS SECTION

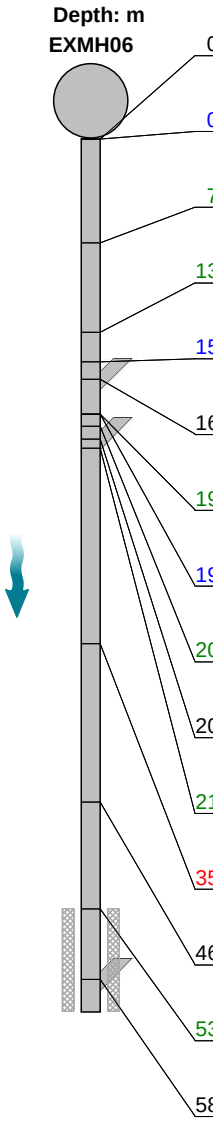
Item No.	Insp. No.	Date:	Time:	Client`s Job Ref	Weather	Pre Cleaned	PLR
56	3	29/06/23	13:53	DK0363	No Rain Or Snow	No	EXMH06X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
JAME G	PJ210MA	Atex Crawler	Not Specified	Not Specified	Not Specified

Town or Village:	Manchester	**Inspection Direction:**	Downstream	**Upstream Node:**	EXMH06
Road:	Hammerstone Road	**Inspected Length:**	85.92 m	**Upstream Pipe Depth:**	
Location:	Other walkway	**Total Length:**	85.92 m	**Downstream Node:**	UU1902
Surface Type:	Concrete Footway	**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Combined	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	750 mm
Flow Control:	No flow control	**Pipe Material:**	Brick
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Sample condition survey	**Lining Material:**	No Lining

Comments:
Recommendations:



Scale: 1:527 Position [m]		Code	Observation	MPEG	Photo	Grade
0.00		MH	Start node, manhole, reference: EXMH06	00:00:00		
0.00		WL	Water level, 10% of the vertical dimension	00:00:04		
7.27		DER	Settled deposits, coarse, 5% cross-sectional area loss	00:00:36	EXMH06X_eed5b47b-ed46-48	3
13.44		DER	Settled deposits, coarse, 5% cross-sectional area loss	00:00:56	EXMH06X_a55d7d83-2f42-41d	3
15.50		WL	Water level, 10% of the vertical dimension	00:01:07		
16.74		CN	Connection other than junction at 9 o'clock, 750mm dia: Major Branch	00:01:13		
19.18		OBB	Other obstacles, brick or masonry in invert from 7 o'clock to 8 o'clock, 15% cross-sectional area loss: Unable to jet due to bricks catching encrustation	00:01:51	EXMH06X_1122bd28-ce2d-4a	5
19.18		REM	General remark: Needs to be jetted from the downstream node	00:01:51		
20.02		OBB	Other obstacles, brick or masonry in invert at 6 o'clock, 10% cross-sectional area loss	00:02:00	EXMH06X_061fc6ce-03c3-410	5
20.92		CN	Connection other than junction at 9 o'clock, 300mm dia	00:02:19		
21.52		DEE	Attached deposits, encrustation from 5 o'clock to 7 o'clock, 15% cross-sectional area loss: Bricks are catching on this whilst jetting, unable to remove	00:02:25	EXMH06X_705dcd75-53f9-487	3
35.12		DH	Deformed horizontally, 5%: Bricks moved causing an improper flow	00:04:43	EXMH06X_db1f7b05-343a-492	2 / 2
46.13		SCO	Shape changes to oval, new size(s), 750mm high, 800mm wide	00:05:32		
53.59	S01	DEE	Attached deposits, encrustation from 8 o'clock to 4 o'clock, 5% cross-sectional area loss, start	00:06:00	EXMH06X_b2d37cc8-baa6-423	
58.49		CN	Connection other than junction at 9 o'clock, 300mm dia	00:06:18		

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Section Inspection - 29/06/2023 - EXMH06X

WEB PROJECT CLICK TO OPEN THIS SECTION

Item No.	Insp. No.	Date:	Time:	Client`s Job Ref	Weather	Pre Cleaned	PLR
56	3	29/06/23	13:53	DK0363	No Rain Or Snow	No	EXMH06X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
JAME G	PJ210MA	Atex Crawler	Not Specified	Not Specified	Not Specified



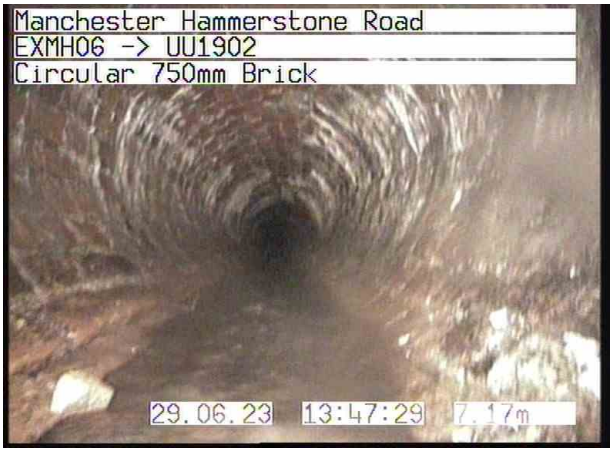
Scale: 1:527	Position [m]		Code	Observation	MPEG	Photo	Grade
	63.02		CN	Connection other than junction at 3 o'clock, 750mm dia: Major Branch	00:06:40		
	66.41	F01	DEE	Attached deposits, encrustation from 8 o'clock to 4 o'clock, 5% cross-sectional area loss, finish	00:07:32	EXMH06X_6b01fa59-4330-489	3
	85.24		CN	Connection other than junction at 9 o'clock, 300mm dia	00:08:52		
	85.24		LD	Line deviates down	00:08:52		
	85.92		MHF	Finish node, manhole, reference: UU1902: MH In View	00:09:28		

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
1	20.0	0.2	20.0	2.0	7	10.0	0.6	53.0	5.0

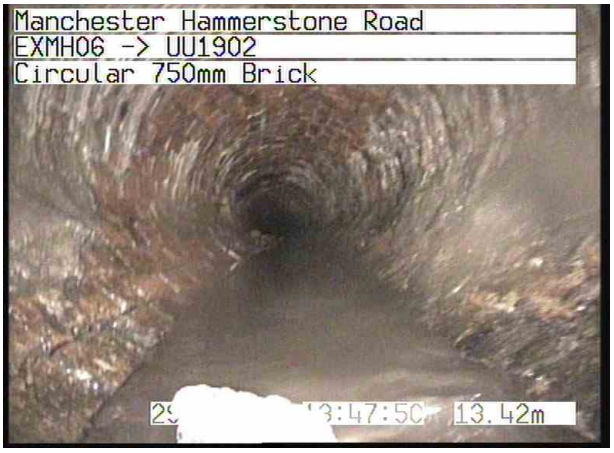
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Section Pictures - 29/06/2023 - EXMH06X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
56	Downstream	EXMH06X	DK0363	



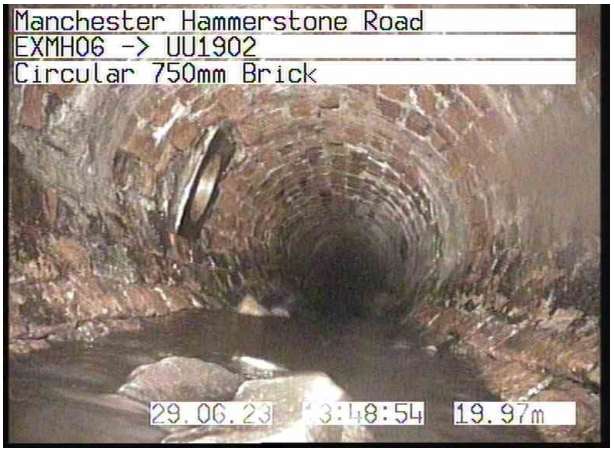
EXMH06X_eed5b47b-ed46-48a0-857e-6e44c42f80e7_20230704_092341_194.jpg, 00:00:36, 7.27 m
Settled deposits, coarse, 5% cross-sectional area loss



EXMH06X_a55d7d83-2f42-41d3-88d7-abd184265b1f_20230704_092346_033.jpg, 00:00:56, 13.44 m
Settled deposits, coarse, 5% cross-sectional area loss



EXMH06X_1122bd28-ce2d-4a72-aa66-86907662bf99_20230704_092352_690.jpg, 00:01:51, 19.18 m
Other obstacles, brick or masonry in invert from 7 o'clock to 8 o'clock, 15% cross-sectional area loss, Unable to jet due to bricks catching encrustation



EXMH06X_061fc6ce-03c3-4108-b9bc-a6451c6e9e0e_20230704_092358_690.jpg, 00:02:00, 20.02 m
Other obstacles, brick or masonry in invert at 6 o'clock, 10% cross-sectional area loss

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Section Pictures - 29/06/2023 - EXMH06X

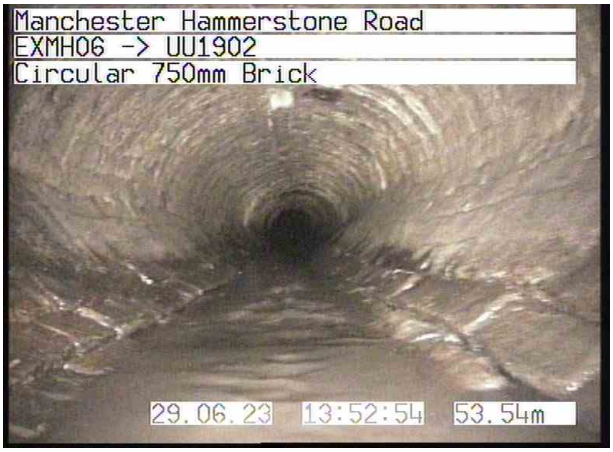
Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
56	Downstream	EXMH06X	DK0363	



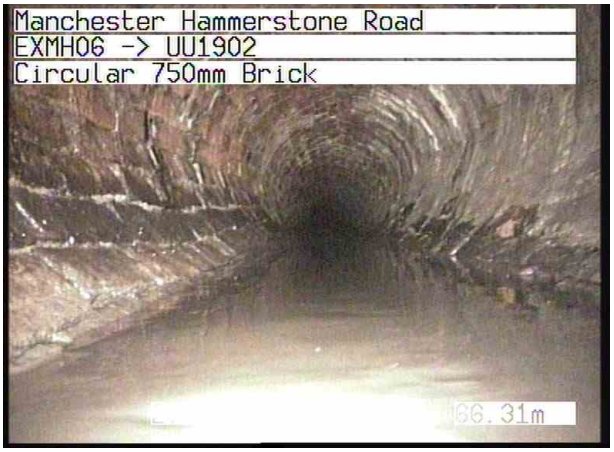
EXMH06X_705dcd75-53f9-4874-8eb6-03ca64d7bcdd_20230704_092405_783.jpg, 00:02:25, 21.52 m
Attached deposits, encrustation from 5 o'clock to 7 o'clock, 15% cross-sectional area loss, Bricks are catching on this whilst jetting, unable to remove



EXMH06X_db1f7b05-343a-4923-9bc0-7baf1208481a_20230704_092412_620.jpg, 00:04:43, 35.12 m
Deformed horizontally, 5%, Bricks moved causing an improper flow



EXMH06X_b2d37cc8-baa6-4236-ae01-568821f6fe03_20230704_092421_558.jpg, 00:06:00, 53.59 m
Attached deposits, encrustation from 8 o'clock to 4 o'clock, 5% cross-sectional area loss, start



EXMH06X_6b01fa59-4330-4891-a585-e5ad4d59d3d0_20230704_092429_813.jpg, 00:07:32, 66.41 m
Attached deposits, encrustation from 8 o'clock to 4 o'clock, 5% cross-sectional area loss, finish

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Section Inspection - 04/10/2023 - MH25X

WEB PROJECT CLICK TO OPEN THIS SECTION

Item No.	Insp. No.	Date:	Time:	Client`s Job Ref	Weather	Pre Cleaned	PLR
57	1	04/10/23	10:25	DK0526 ADANA CONSTRUCTION	Rain	Yes	MH25X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
ROBBIE DAVIN	Not Specified	Solo	Not Specified	Not Specified	1

Town or Village:	Gorton, Manchester	**Inspection Direction:**	Downstream	**Upstream Node:**	MH25
Road:	1 Hammerstone Road	**Inspected Length:**	10.09 m	**Upstream Pipe Depth:**	
Location:	Property or buildings	**Total Length:**	10.09 m	**Downstream Node:**	UU2801
Surface Type:		**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Combined	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	150 mm
Flow Control:	No flow control	**Pipe Material:**	Vitrified clay
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Sample condition survey	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:88



Position [m]	Code	Observation	MPEG	Photo	Grade
Depth: m					
MH25					
0.00	MH	Start node, manhole, reference: MH25	00:00:00		
0.00	WL	Water level, 5% of the vertical dimension	00:00:00		
10.09	JN	Junction at 6 o'clock, 150mm dia: DROPSHAFT	00:01:27	MH25 DS UU2801_1 0-09m_10	
10.09	MHF	Finish node, manhole, reference: UU2801	00:01:29		
UU2801					
Depth: m					

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0

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Section Pictures - 04/10/2023 - MH25X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
57	Downstream	MH25X	DK0526 ADANA	NRC WWS LTD



MH25 DS UU2801_10-09m_102744.jpg, 00:01:27, 10.09 m
Junction at 6 o'clock, 150mm dia, DROPSHAFT

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Section Inspection - 22/08/2023 - UUMH2708X

WEB PROJECT CLICK TO OPEN THIS SECTION

Item No.	Insp. No.	Date:	Time:	Client`s Job Ref	Weather	Pre Cleaned	PLR
58	1	22/08/23	11:16	Not Specified	No Rain Or Snow	Yes	UUMH2708X

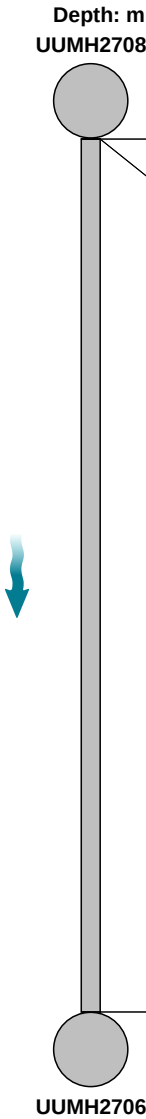
Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
D.MORRISON	PK20 Syx	Crawler	Not Specified	Not Specified	Not Specified

Town or Village:	Manchester	**Inspection Direction:**	Downstream	**Upstream Node:**	UUMH2708
Road:	Hammerstone Road	**Inspected Length:**	29.74 m	**Upstream Pipe Depth:**	
Location:	Road	**Total Length:**	29.74 m	**Downstream Node:**	UUMH2706
Surface Type:	Asphalt Highway	**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Foul	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	450 mm
Flow Control:	No flow control	**Pipe Material:**	Concrete
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Investment planning	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:258



Position [m]	Code	Observation	MPEG	Photo	Grade
0.00	MH	Start node, manhole, reference: UUMH2708	00:00:00		
0.00	WL	Water level, 5% of the vertical dimension	00:03:34		
29.74	MHF	Finish node, manhole, reference: UUMH2706	00:03:23		

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
0	0.0	0.0	0.0	1.0	0	0.0	0.0	0.0	1.0

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Section Inspection - 22/08/2023 - EXFW1BX

WEB PROJECT CLICK TO OPEN THIS SECTION

Item No.	Insp. No.	Date:	Time:	Client`s Job Ref	Weather	Pre Cleaned	PLR
59	1	22/08/23	11:00	Not Specified	No Rain Or Snow	Yes	EXFW1BX

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
D.MORRISON	PK20 Syx	Coiler	Not Specified	Not Specified	Not Specified

Town or Village:	Manchester	**Inspection Direction:**	Upstream	**Upstream Node:**	EXFW1B
Road:	Hammerstone Road	**Inspected Length:**	7.05 m	**Upstream Pipe Depth:**	
Location:	Road	**Total Length:**	7.05 m	**Downstream Node:**	UUMH2708
Surface Type:	Asphalt Highway	**Joint Length:**		**Downstream Pipe Depth:**	2.200 m

Use:	Combined	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	225 mm
Flow Control:	No flow control	**Pipe Material:**	Vitrified clay
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Investment planning	**Lining Material:**	No Lining

Comments:
Recommendations: PATCH / FULL LINER

Scale: 1:62

Depth: 2.20 m
UUMH2708



EXFW1B
Depth: m

Position [m]	Code	Observation	MPEG	Photo	Grade
0.00	MH	Start node, manhole, reference: UUMH2708	00:00:00		
0.01	WL	Water level, 5% of the vertical dimension	00:00:00		
3.09	FCJ	Fracture, circumferential at joint from 1 o'clock to 10 o'clock	00:00:46	EXFW1BX_4dbb72b1-1295-45	3 / 2
4.58	FL	Fracture, longitudinal at 4 o'clock	00:01:32	EXFW1BX_db974e72-2cce-4a	3 / 2
4.58	FL	Fracture, longitudinal at 8 o'clock	00:01:38	EXFW1BX_5939447d-403e-4a	3 / 2
6.29	FCJ	Fracture, circumferential at joint from 10 o'clock to 1 o'clock	00:02:03	EXFW1BX_1f52a089-6d68-439	3 / 2
7.05	MHF	Finish node, manhole, reference: EXFW1B	00:03:29		

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
4	80.0	22.7	160.0	3.0	4	2.0	0.6	4.0	3.0

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Section Pictures - 22/08/2023 - EXFW1BX

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
59	Upstream	EXFW1BX		DK0472



EXFW1BX_4dbb72b1-1295-4541-a76e-22125fdc992b_20230822_110208_059.jpg, 00:00:46, 3.09 m
Fracture, circumferential at joint from 1 o'clock to 10 o'clock



EXFW1BX_db974e72-2cce-4a01-80a6-9243de8bc956_20230822_110300_543.jpg, 00:01:32, 4.58 m
Fracture, longitudinal at 4 o'clock



EXFW1BX_5939447d-403e-4a0f-ae56-577e9bebf2b4_20230822_110312_377.jpg, 00:01:38, 4.58 m
Fracture, longitudinal at 8 o'clock



EXFW1BX_1f52a089-6d68-439b-b6e4-a2acf425ded2_20230822_110353_274.jpg, 00:02:03, 6.29 m
Fracture, circumferential at joint from 10 o'clock to 1 o'clock

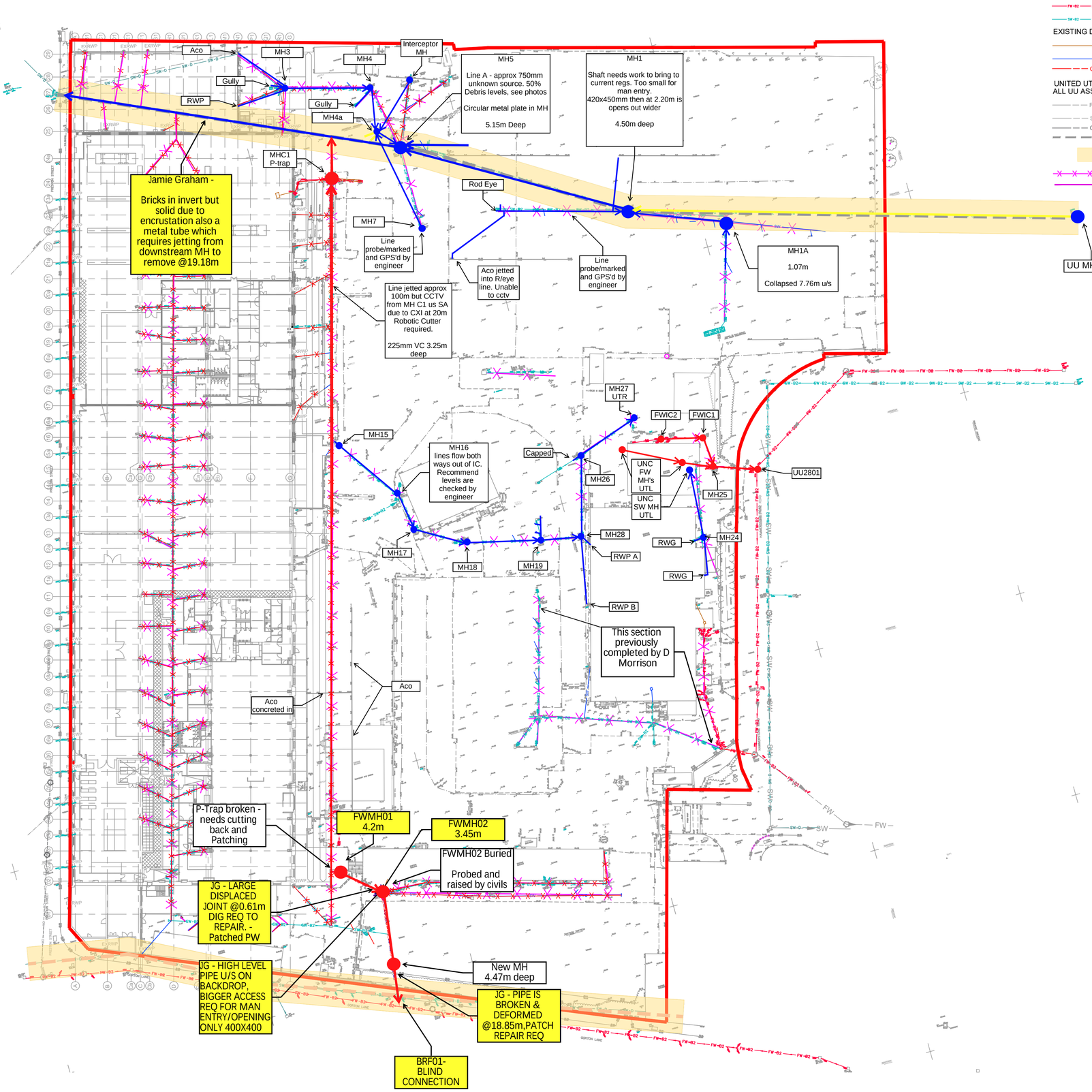
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Section Pictures - 22/08/2023 - EXFW1BX

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
59	Upstream	EXFW1BX		DK0472



EXFW1BX_9b32c581-e6a0-4426-97a8-5dfa9d785a36_20230822_110456_184.jpg, 00:02:03, 6.29 m
Fracture, circumferential at joint from 10 o'clock to 1 o'clock



LEGEND

- SITE BOUNDARY BASED ON HRD-FRA-00-XX-DR-A-90-0200

EXISTING SERVICES BASED ON GPR SURVEY S17480-U DEC 2018

- BT CABLE
- ELECTRICITY CABLE
- TELECOM CABLE
- UNKNOWN SERVICE
- FOUL WATER PIPE
- SURFACE WATER PIPE

EXISTING DRAINAGE BASED ON CCTV SURVEY DEC 2018

- FOUL WATER PIPE
- SURFACE WATER PIPE
- COMBINED WATER PIPE

UNITED UTILITIES RECORDS UUPS-ORD-76950
ALL UU ASSETS ARE SHOWN INDICATIVELY

- UU FOUL WATER SEWER
- UU SURFACE WATER SEWER
- UU COMBINED WATER SEWER
- WATERCOURSE
- 8M EASEMENT BASED ON SEWER FOR ADOPTION 6TH EDITION
- ABANDONED
- EXISTING DRAINAGE UNSURVEYED, ROUTE ASSUMED

GENERAL NOTES:

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTS AND ENGINEERS DRAWINGS AND SPECIFICATIONS.
2. DO NOT SCALE THIS DRAWING. ANY AMBIGUITIES, OMISSIONS AND ERRORS ON DRAWINGS SHALL BE BROUGHT TO THE ENGINEERS ATTENTION IMMEDIATELY. ALL DIMENSIONS MUST BE CHECKED / VERIFIED ON SITE.

DRAWING BASED ON:
TOPOGRAPHICAL SURVEY BY SEP S15724-T
GPR SURVEY BY SEP S17480-U DEC 2018 JUNE 2018
CCTV SURVEY BY SEP DRAINAGE SURVEYS LTD DEC 2018
ADDITIONAL CCTV SURVEY AUG 2020
ADDITIONAL CCTV SURVEY DECEMBER 2021
EXISTING BUILDING SURVEY BY SEP S15724-GA JUNE 2018
UU RECORDS UUPS-ORD-76950
ARCHITECT RWP SKETCH PROVIDED 13.01.22

Rev:	Description:	Date:	By:	Chkd:
C01	CONSTRUCTION ISSUE	26.09.22	MW	MW
P02	UPDATED FOLLOWING CCTV SURVEY& RWPS POSITION PROVIDED ON ARCHITECT SKETCH	21.01.22	MW	MW
P01	STAGE 4 ISSUE	05.08.21	TH	MW

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Status: STAGE 5

Project: HAMMERSTONE ROAD

Drg Title: ASSUMED EXISTING DRAINAGE AND ADDITIONAL SURVEY

Project No:	Size:	Date:	Drawn By:	Designed By:	Checked By:
068065	A1	05.08.21	TH	MW	MW
	Scale: 1:500				

Project Code: HRD | Originator: CUR | Zone: XX | Level: 00 | Type: DR | Discipline: C | Category / Number: 92-514 | Rev: -C01

\\mafs\22\Projects\068001 - 069000\068065 - Hammerstone Road Depot\04\S 4 Production\4B Models & Drawings_Civil (C4D)

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WEB PROJECT
CLICK TO OPEN THIS PROJECT

Project

Project Name:	DK0758 Adana Hammerstone rd Goreton Manchester 25-31 01 24
Project Date:	25/01/2024
Inspection Standard:	MSCC5 Sewers & Drainage GB (SRM5 Scoring)

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Table of Contents

Project Name	Project Number	Project Date
DK0758 Adana Hammerstone rd Goreton Manchester 25-31 01 24		25/01/2024

Project Information P-1

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Section Item 4: UU MH3803 > MH1A (UU MH3803X) 6

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Project Information

Project Name	Project Number	Project Date
DK0758 Adana Hammerstone rd Goreton Manchester 25-31 01 24		25/01/2024

Client

Company: ADANA CONSTRUCTION
Description: ADANA HOUSE
Contact: 140 HIGHER HILLGATE
Department: STOCKPORT
Street: SK1 3QT

Site

Company: ADANA CONSTRUCTION
Contact: DK0758 Adana Hammerstone rd Goreton Manchester 25-

Contractor

Company: NRCWWS
Contact: Derek Kearns
Department: Director
Street: unit D. Russell Road
Town or City: Rock Ferry
County: Wirral
Post Code: CH42 1LU
Phone: 0151 643 0800
Email: derek.kearns@nrcwws.co.uk

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Section Inspection - 01/02/2024 - MH5X

WEB PROJECT CLICK TO OPEN THIS SECTION

Item No.	Insp. No.	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
1	3	01/02/24	16:38	NRC WWS LTD	No Rain Or Snow	Yes	MH5X

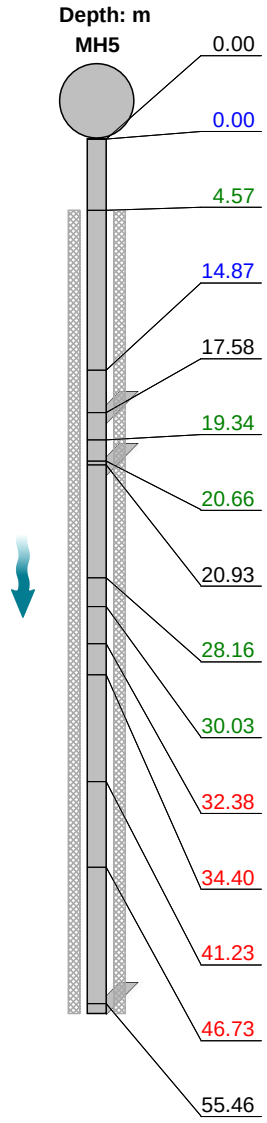
Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
K.Graham	PK68 XZZ	Crawler	Not Specified	Not Specified	Not Specified

Town or Village:	Manchester	**Inspection Direction:**	Downstream	**Upstream Node:**	MH5
Road:	Hammerstone Rd	**Inspected Length:**	81.84 m	**Upstream Pipe Depth:**	
Location:	Property or buildings	**Total Length:**	81.84 m	**Downstream Node:**	OFFSITE
Surface Type:	Asphalt Highway	**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:		**Dia/Height:**	600 mm
Flow Control:	No flow control	**Pipe Material:**	Brick
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Sample condition survey	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:486



Position [m]		Code	Observation	MPEG	Photo	Grade
0.00		MH	Start node, manhole, reference: MH5	00:00:00		
0.00		WL	Water level, 5% of the vertical dimension	00:00:05		
4.57	S01	DEE	Attached deposits, encrustation from 01 o'clock to 11 o'clock, 5% cross-sectional area loss, start	00:01:30		
14.87		WL	Water level, 10% of the vertical dimension	00:03:01		
17.58		JX	Junction, defective at 09 o'clock, 450mm dia: lose bricks in jnction	00:04:39		
19.34		DEZ	Attached deposits, other from 05 o'clock to 07 o'clock, 15% cross-sectional area loss: bricks and poss concrete in invert	00:05:39		3
20.66		DEZ	Attached deposits, other from 05 o'clock to 07 o'clock, 15% cross-sectional area loss: concrete in invert	00:06:41		3
20.93		CN	Connection other than junction at 09 o'clock, 225mm dia	00:06:59		
28.16		IG	Infiltration, gushing at 09 o'clock: from joint on brick work	00:09:05		
30.03		IG	Infiltration, gushing at 08 o'clock: from joint on brick work	00:09:42		
32.38		FL	Fracture, longitudinal at 12 o'clock	00:10:11		4 / 2
34.40		FL	Fracture, longitudinal at 12 o'clock	00:10:37		4 / 2
41.23		D	Deformed sewer or drain, 10%	00:11:49		
46.73		MB	Missing bricks at 11 o'clock	00:12:54		4
55.46		CN	Connection other than junction at 09 o'clock, 300mm dia	00:14:36		

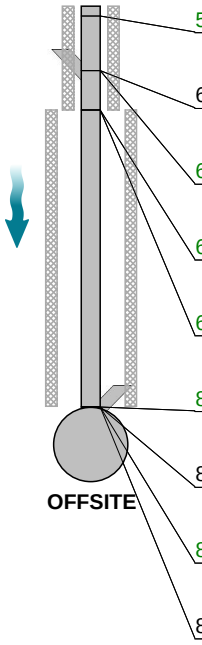
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Section Inspection - 01/02/2024 - MH5X

WEB PROJECT CLICK TO OPEN THIS SECTION

Item No.	Insp. No.	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
1	3	01/02/24	16:38	NRC WWS LTD	No Rain Or Snow	Yes	MH5X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
K.Graham	PK68 XZZ	Crawler	Not Specified	Not Specified	Not Specified



Scale: 1:486	Position [m]		Code	Observation	MPEG	Photo	Grade
	56.76		ID	Infiltration, dripping at 12 o'clock: from encrustation	00:15:02		
	60.28		JX	Junction, defective at 03 o'clock, 600mm dia: loose bricks	00:16:20		
	60.28		ID	Infiltration, dripping at 12 o'clock	00:16:28		
	62.80	F01	DEE	Attached deposits, encrustation from 1 o'clock to 11 o'clock, 5% cross-sectional area loss, finish	00:17:00		3
	62.80	S02	DEE	Attached deposits, encrustation from 12 o'clock to 05 o'clock, 5% cross-sectional area loss, start	00:17:18		
	81.84		LD	Line deviates down: sharp	00:20:16		
	81.84		CN	Connection other than junction at 09 o'clock, 225mm dia: in poss old chamber	00:20:41		
	81.84	F02	DEE	Attached deposits, encrustation from 12 o'clock to 5 o'clock, 5% cross-sectional area loss, finish	00:20:56		3
	81.84		MHF	Finish node, manhole, reference: OFFSITE: MH in view	00:21:16		

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
3	120.0	3.9	320.0	4.0	6	4.0	2.0	164.0	3.0

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Section Inspection - 25/01/2024 - MH1X

WEB PROJECT CLICK TO OPEN THIS SECTION

Item No.	Insp. No.	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
2	1	25/01/24	9:17	NRC WWS LTD	No Rain Or Snow	Yes	MH1X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
K.Graham	PK68 XZZ	Crawler	Not Specified	Not Specified	Not Specified

Town or Village:	Manchester	**Inspection Direction:**	Upstream	**Upstream Node:**	MH1
Road:	Hammerstone Rd	**Inspected Length:**	51.87 m	**Upstream Pipe Depth:**	
Location:	Property or buildings	**Total Length:**	63.99 m	**Downstream Node:**	MH5
Surface Type:	Asphalt Highway	**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:		**Dia/Height:**	750 mm
Flow Control:	No flow control	**Pipe Material:**	Brick
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Sample condition survey	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:555



Position [m]		Code	Observation	MPEG	Photo	Grade
0.00		MH	Start node, manhole, reference: MH5	00:00:00		
0.00		WL	Water level, 5% of the vertical dimension	00:00:07		
0.47		MCCO	Pipe material changes to concrete at this point	00:00:28		
11.86		LL	Line deviates left	00:01:23		
14.00		FLJ	Fracture, longitudinal at joint at 9 o'clock	00:04:10	MH1X_51f353b9-360a-4272-9e	
17.07		CN	Connection other than junction at 10 o'clock, 300mm dia	00:02:22		
23.52		DEG	Attached deposits, grease at 08 o'clock, 5% cross-sectional area loss: grease	00:03:13	MH1X_012cdac9-bc28-4f1c-bf	3
29.88		CN	Connection other than junction at 01 o'clock, 225mm dia	00:03:52		
37.00		FLJ	Fracture, longitudinal at joint at 8 o'clock	00:04:23	MH1X_d86746ce-af0b-49ac-bf	
39.80	S02	FL	Fracture, longitudinal at 12 o'clock, start	00:02:42		
40.00		FLJ	Fracture, longitudinal at joint at 9 o'clock	00:04:38	MH1X_cd383f44-f452-42c0-b12	
51.86	F02	FL	Fracture, longitudinal at 12 o'clock, finish	00:02:42		4 / 2
51.87		MHF	Finish node, manhole, reference: MH1	00:06:21		

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
1	120.0	24.4	1560.0	4.0	2	4.0	0.3	17.0	3.0

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Section Pictures - 25/01/2024 - MH1X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
2	Upstream	MH1X	NRC WWS LTD	



MH1X_51f353b9-360a-4272-9ee9-2f0bf5299c1e_20240201_102217_287.jpg, 00:04:10, 14.00 m
Fracture, longitudinal at joint at 9 o'clock



MH1X_012cdac9-bc28-4f1c-bf1c-46af3d245a1e_20240201_101857_282.jpg, 00:03:13, 23.52 m
Attached deposits, grease at 08 o'clock, 5% cross-sectional area loss, grease



MH1X_d86746ce-af0b-49ac-bf60-ade12876c7f0_20240201_102241_993.jpg, 00:04:23, 37.00 m
Fracture, longitudinal at joint at 8 o'clock



MH1X_cd383f44-f452-42c0-b12e-c7d4cdfae8e6_20240201_102311_947.jpg, 00:04:38, 40.00 m
Fracture, longitudinal at joint at 9 o'clock

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Section Inspection - 25/01/2024 - MH1AX

WEB PROJECT CLICK TO OPEN THIS SECTION

Item No.	Insp. No.	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
3	1	25/01/24	9:25	NRC WWS LTD	No Rain Or Snow	Yes	MH1AX

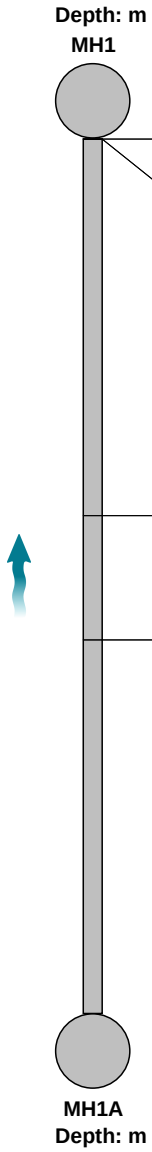
Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
K.Graham	PK68 XZZ	Crawler	Not Specified	Not Specified	Not Specified

Town or Village:	Manchester	**Inspection Direction:**	Upstream	**Upstream Node:**	MH1A
Road:	Hammerstone Rd	**Inspected Length:**	38.00 m	**Upstream Pipe Depth:**	
Location:	Property or buildings	**Total Length:**	46.53 m	**Downstream Node:**	MH1
Surface Type:	Asphalt Highway	**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:		**Dia/Height:**	750 mm
Flow Control:	No flow control	**Pipe Material:**	Brick
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Sample condition survey	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:403



Position [m]	Code	Observation	MPEG	Photo	Grade
0.00	MH	Start node, manhole, reference: MH1	00:00:00		
0.00	WL	Water level, 5% of the vertical dimension	00:00:06		
20.03	REM	General remark: rope running through invert	00:01:50		
26.67	MHF	Finish node, manhole, reference: MH1A	00:02:34		

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
1	0.0	2.6	120.0	4.0	1	0.0	0.0	1.0	1.0

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Section Inspection - 25/01/2024 - UU MH3803X

WEB PROJECT CLICK TO OPEN THIS SECTION

Item No.	Insp. No.	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
4	2	25/01/24	13:24	NRC WWS LTD	No Rain Or Snow	Yes	UU MH3803X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
K.Graham	PK68 XZZ	Crawler	Not Specified	Not Specified	Not Specified

Town or Village:	Manchester	**Inspection Direction:**	Upstream	**Upstream Node:**	UU MH3803
Road:	Hammerstone Rd	**Inspected Length:**	10.68 m	**Upstream Pipe Depth:**	
Location:	Property or buildings	**Total Length:**	10.68 m	**Downstream Node:**	MH1A
Surface Type:	Asphalt Highway	**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:		**Dia/Height:**	750 mm
Flow Control:	No flow control	**Pipe Material:**	Brick
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Sample condition survey	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:93



Position [m]	Code	Observation	MPEG	Photo	Grade
0.00	MH	Start node, manhole, reference: MH1A	00:00:00		
0.00	WL	Water level, 5% of the vertical dimension	00:00:05		
6.73	H	Hole in drain or sewer at 12 o'clock: MISSING BRICK	00:01:37	UU MH3803X _7de389c	
10.68	MHF	Finish node, manhole, reference: UU MH3803	00:03:11		

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
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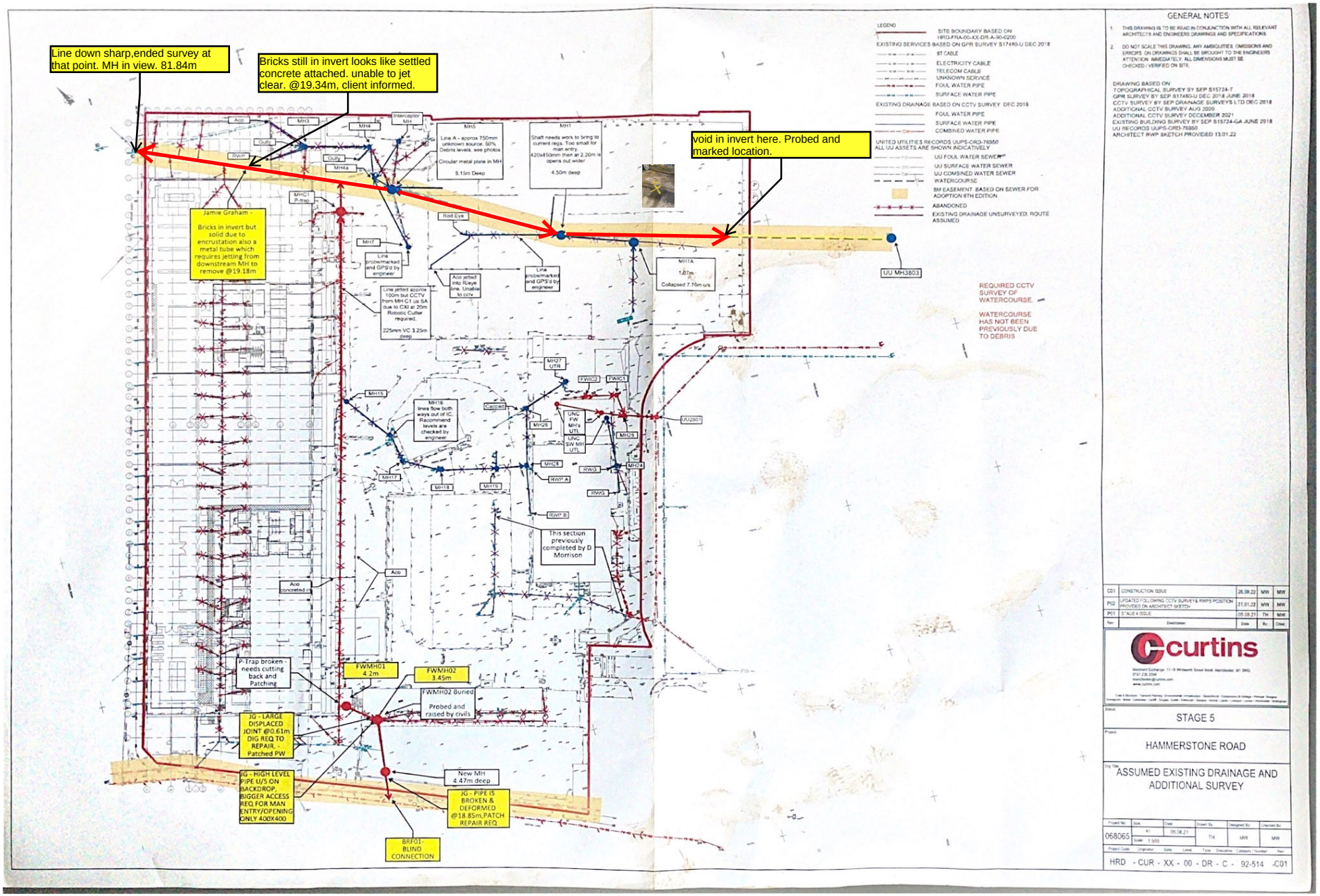
NRCWWS
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Section Pictures - 25/01/2024 - UU MH3803X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
4	Upstream	UU MH3803X	NRC WWS LTD	



UU MH3803X_7de389c4-e6ec-4690-9aac-c2fc7a252f20_20240201_170816_726.jpg, 00:01:37, 6.73 m
Hole in drain or sewer at 12 o'clock, MISSING BRICK


Line down sharp,ended survey at that point. MH in view. 81.84m
Bricks still in invert looks like settled concrete attached. unable to jet clear. @19.34m, client informed.
void in invert here. Probed and marked location.
Jamie Graham - Bricks in invert but solid due to encrustation also a metal tube which requires jetting from downstream MH to remove @19.18m
REQUIRED CCTV SURVEY OF WATERCOURSE.
WATERCOURSE HAS NOT BEEN PREVIOUSLY DUE TO DEBRIS
This section previously completed by D Morrison
P-Trap broken - needs cutting back and Patching
FWMH01 4.2m
FWMH02 3.45m
FWMH02 Buried Probed and raised by civils
JG - LARGE DISPLACED JOINT @0.61m DIG REQ TO REPAIR. - Patched PW
JG - HIGH LEVEL PIPE U/S ON BACKDROP, BIGGER ACCESS REQ FOR MAN ENTRY/OPENING ONLY 400X400
New MH 4.47m deep
JG - PIPE IS BROKEN & DEFORMED @18.85m,PATCH REPAIR REQ
BRF01 - BLIND CONNECTION
GENERAL NOTES
STAGE 5
HAMMERSTONE ROAD
ASSUMED EXISTING DRAINAGE AND ADDITIONAL SURVEY
068065
HRD - CUR - XX - 00 - DR - C - 92-514 .C01

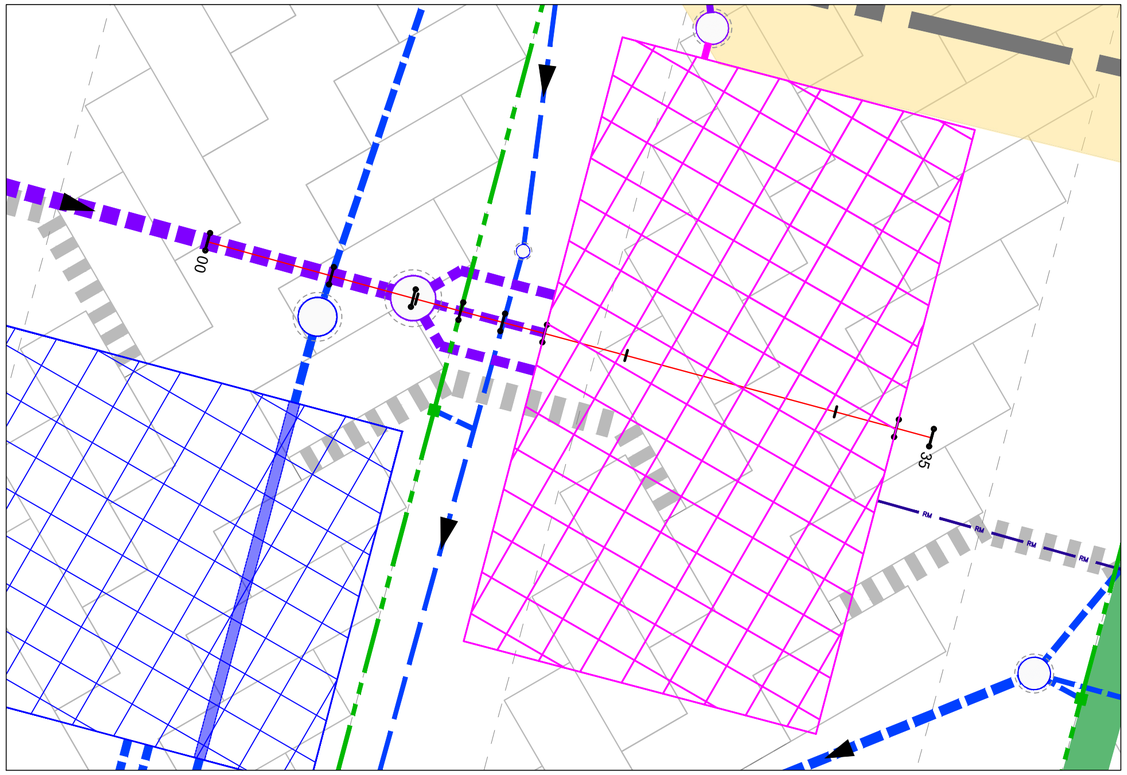
Appendix E

Section Through Tank Connections

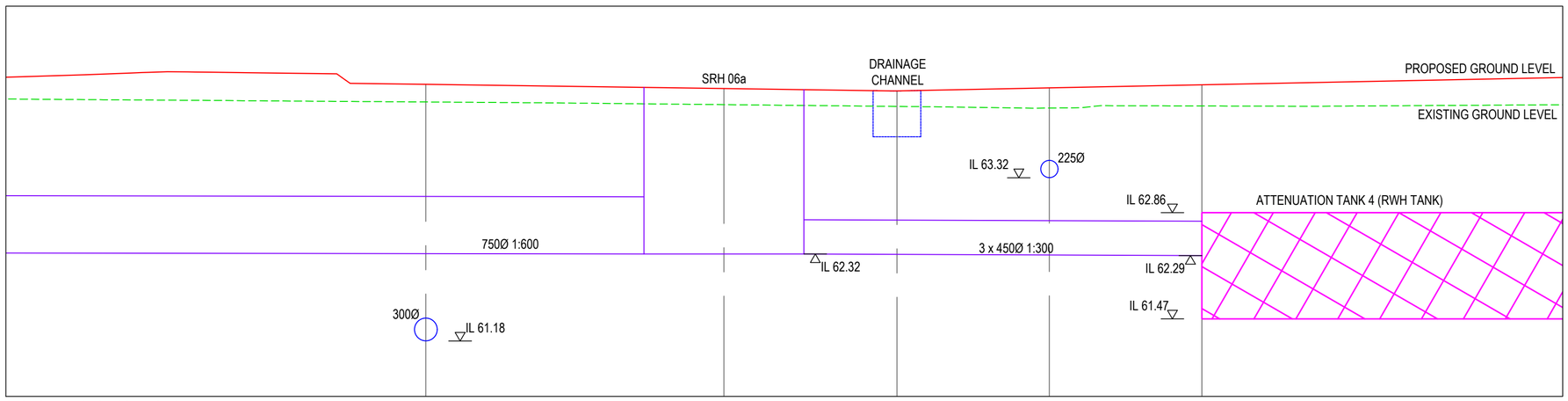
Attenuation Tank Details

Rainwater Harvesting Tank Information

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SECTION LOCATION
SCALE 1:200



SECTION THROUGH CONNECTION
SCALE 1:50

GENERAL NOTES:

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTS AND ENGINEERS DRAWINGS AND SPECIFICATIONS.
2. DO NOT SCALE THIS DRAWING. ANY AMBIGUITIES, OMISSIONS AND ERRORS ON DRAWINGS SHALL BE BROUGHT TO THE ENGINEERS ATTENTION IMMEDIATELY. ALL DIMENSIONS MUST BE CHECKED / VERIFIED ON SITE.
3. ALL DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE.
4. FOR GENERAL NOTES REFER TO DRAWING.

Rev:	Description:	Date:	By:	Chkd:
P01	ISSUED FOR PLANNING CONDITION DISCHARGE	31.01.24	ATL	ATL

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Birmingham • Bristol • Cambridge • Cardiff • Douglas • Dublin • Edinburgh • Glasgow • Kendal • Leeds • Liverpool • London • Manchester • Nottingham

Status: INFORMATION

Project: HAMMERSTONE ROAD

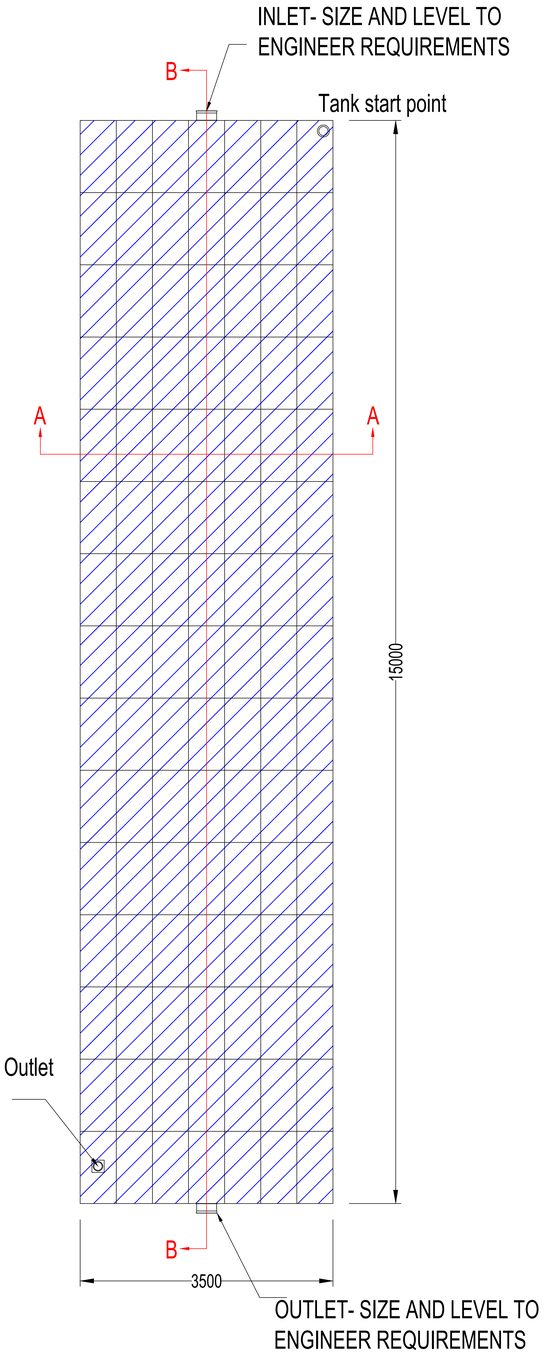
Drg Title: ATTENUATION TANK SECTION THROUGH CONNECTION

Project No:	Size:	Date:	Drawn By:	Designed By:	Checked By:
068065	A2	31/01/25	ATL	ATL	ATL
	Scale: AS SHOWN				

Project No:	Originator:	Volume:	Level:	Type:	Role:	Category / Number:	Rev:
HRD	- CUR -	XX -	00 -	DR -	C -	92540	- P01

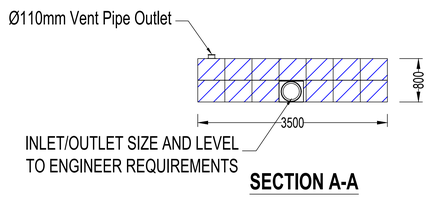
\\ma-fs-1\Projects\068001 - 069000\068065 - Hammerstone Road Depot\0MS 4 Production\4B Models & Drawings_Civil-C\CAD\92\

SCALE: 1:30



PLAN

SCALE: 1:40



SECTION A-A

PROPOSED POLYSTORM STRUCTURE	
Plan Area	52.50m²
Tank Volume	42m³
Storage	39.90m³
Polystorm-R Units	210 (PSM1A)

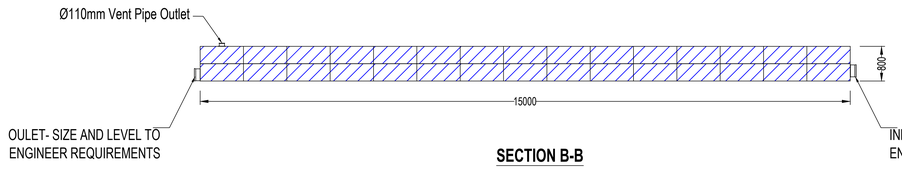
LEGEND:

Polystorm-R Units (PSM1A)

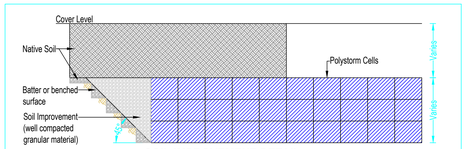
NOTE:

- Fall Arrest Grill to be provided by the developer / contractor (please refer to Consultant's drawings.
- The final position of the access cover should be confirmed by the Consultant and detailed on their drawing.
-Lifting Eyes are to be pointed type - to be provided by the Developer / Contractor (please refer to Consultant's drawings).
- All Polystorm tanks to be installed with a 1:500 fall, please note tank would still drain even if left flat due to our cells 3D flow.

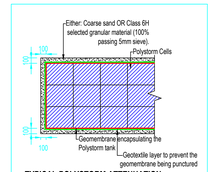
SCALE 1:50



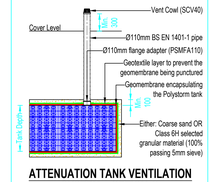
SECTION B-B



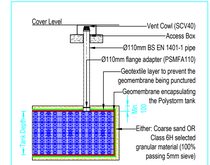
SOIL IMPROVEMENT DETAIL
Scale (1:40)



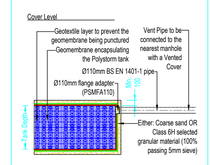
TYPICAL POLYSTORM ATTENUATION INSTALLATION DETAIL
Scale (1:40)



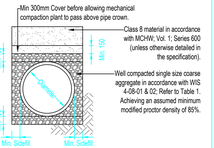
ATTENUATION TANK VENTILATION SYSTEM - OPTION 1)
Scale (1:40)



ATTENUATION TANK VENTILATION SYSTEM - OPTION 2)
Scale (1:40)



ATTENUATION TANK VENTILATION SYSTEM - OPTION 3)
Scale (N.T.S)



TYPICAL SINGLE PIPE INSTALLATION
Scale (1:40)

Table 1 -Pipe Bed & Surround Coarse Aggregate Material Grading

Product	Pipe Size (mm)	Minimum Sidefill (mm)	Material Grading (BS EN 13242, Clause 4.3.2)
Ridgistorm-XL	Ø750 - Ø900	150	4/10, 6/14, 10/20 or 20/40
	Ø1050 - Ø1200	425	
	Ø1500 - Ø3000	500	

NOTES
1. Coarse aggregate materials shall be in accordance with the relevent provisions of BS EN 13242; as detailed within WIS 4-08-02 amendment (Nov 2008). Tables A4 & 5.
2. Alternative pipe bed & surround material specifications shall not be used without prior written approval from the overseeing engineer.
3. For loading specific installation details, where concrete protection may be required, please request RST_SD_001 & 002.

NOTES - PE STUB PIPE ADAPTERS

	PIPE ADAPTOR
Ø160mm SDR26 PE - Ø150mm Polysewer	PS689
Ø250mm SDR26 PE - Ø225mm Polysewer	PS1089
Ø315mm SDR41 PE - Ø300mm Polysewer	PS1289
Ø450mm SDR17 PE - Ø400mm Ridgisewer	see note below*
Ø500mm SDR17 PE - Ø450mm Ridgisewer	see note below*
Ø560mm SDR17 PE - Ø500mm Ridgisewer	see note below*
Ø630mm SDR33 PE - Ø600mm Ridgisewer	see note below*

* - For this transition, Flexseals are required, please refer to their website.

LIFTING POINTS - UNSUITABLE FOR LIFT

1. Fabricated chamber supplied to site without direct means of lifting incorporated. The lift supervisor must assess and plan the lift, in the circumstances of the lift, and provide slings and / or other controls as deemed necessary to ensure a safe lift.

POLYSTORM NOTES

1. This drawing needs to be read in conjunction with all relevant Architects, Engineers and specialist drawings.
2. Stormwater Attenuation / Infiltration system shall be Polypipe Civil's Polystorm pre-formed geocellular system, with minimum 94% volumetric void. Units shall be installed using recommended jointing clips to maintain rigidity and minimise deflection.
3. Multi-layered Polystorm tank configurations shall be fixed with proprietary shear connectors between each vertical layer to maintain rigidity and minimise lateral displacement.
4. Drawings should be read in conjunction with the supportings structural calculations, which are illustrative and should be validated by a suitably qualified Engineer, or similar
5. For Field conditions, backfill should be placed and compacted in layers no greater than 300mm and for trafficked areas, backfill should be placed and compacted in layers no greater than 150mm.
6. The installer shall ensure that all expected temporary construction transient loads have been considered as part of the structural design and a minimum of 300mm backfill should be placed prior to initial compaction.
7. Polystorm Tanks should be installed in accordance with Polypipe Civils recommendations (refer to technical guidance for further information).

COVER SLAB THICKNESS

1. Where cover slabs are applicable, the slab thickness (shown in red) has been assumed and therefore needs to be confirmed by others.

STANDARD TOLERANCES

ALL DIMENSIONS IN MILLIMETRES, UNLESS OTHERWISE STATED.

Benching Slope	1:10 to 1:30 (1.9° - 5.7°)
Angles	+/- 1.5°
All Dimensions	+50mm / -30mm

STANDARD SPIGOTS IN ACCORDANCE WITH SPEC. ES23.

Team Leader inspection points identified by: (1) (2) (3)

JOINTING KEY

Socket	RS	Ring seal joint	
Spigot	IEW	Internal extrusion welding joint	
	EF	Electro-fusion joint	

GENERAL NOTES

1. This drawing details Polypipe Civils proposed offering, reflecting our interpretation of the information provided.
2. Polypipe bespoke Ridgistorm-XL chambers are complete pre-formed units.
3. Polypipe products to be installed in accordance with Polypipe Civils recommendations (refer to Polypipe technical guidance for further information), giving due consideration to the requirements of the organisation who will take ultimate ownership of the installation.
4. Site conditions may require specific installation requirements. The installer should verify that the proposed installation method is acceptable, giving due consideration to the requirements of the relevant approving and adopting authorities, before construction activities commence.
5. Advice on any system requirements specific to the proposed Ridgistorm XL system should be sought from Polypipe Civils.
6. All PE stub connections will require adaptors (to be supplied by Contractor / Developer).

DRAWING NOTES

1. Drawings should not be scaled, refer to figured dimensions only.
2. All dimensions in millimetres, unless otherwise stated.
3. All dimensions are nominal and may vary within manufacturing or construction tolerances.
4. All site temporary and enabling works by others.
5. This drawing is intended for guidance only. Confirmation of the information contained within this document should be sought from the consulting engineers before final design or construction activities commence.

R1 14/01/2025 TANK SHAPE/SIZE REVISED BY CUSTOMER

KEYTEC INSTALLATION SERVICES

KEYTEC INSTALLATION SERVICES
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COWM TOP BUSINESS PARK
COWM TOP LANE
OL11 2PU
TEL: 01706 374416
EMAIL: TECHNICAL@KEYTEC.CO.UK

PROJECT

HAMMERSTONE ROAD

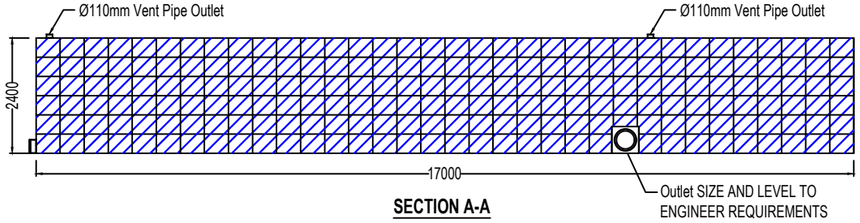
ATTENUATION TANK

TITLE

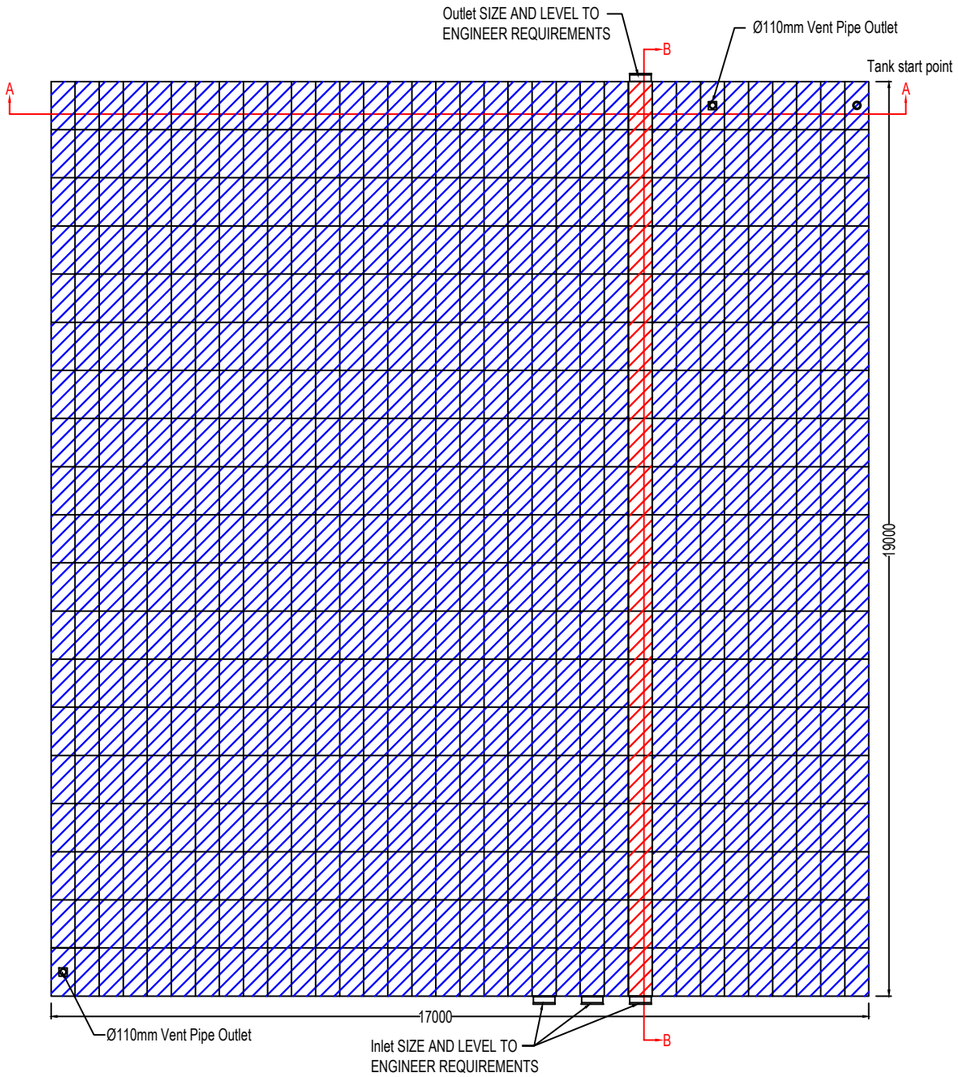
DETAILS OF ATTENUATION/STORAGE TANK DETAILS USING POLYSTORM PAM1A UNITS

Scale	Drawn	Checked
AS SHOWN	FA	KD

Date	Drawing No.	Revision
16/01/2025	PSM - 2.0	R0



SECTION A-A

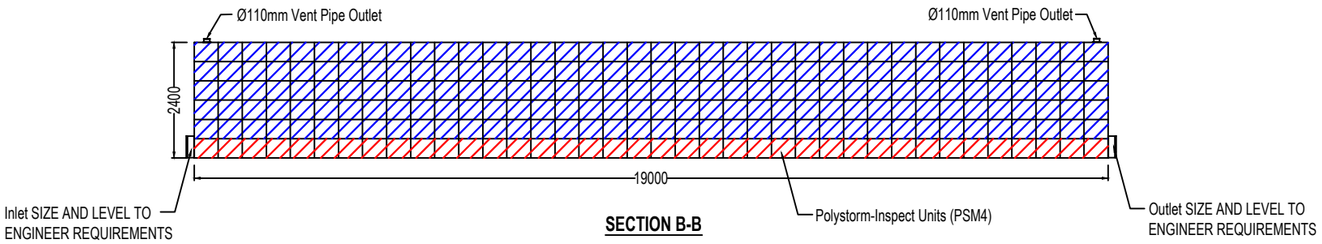


PROPOSED POLYSTORM STRUCTURE	
Plan Area	323m²
Tank Volume	775.2m³
Storage	736.44m³
Polystorm-R Units	3857 (PSM1A)
Polystorm-Inspect Units	19 (PSM4)

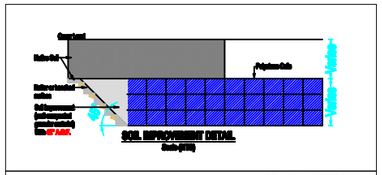
LEGEND:

Polystorm-R Units (PSM1A)

Polystorm-Inspect Units (PSM4)

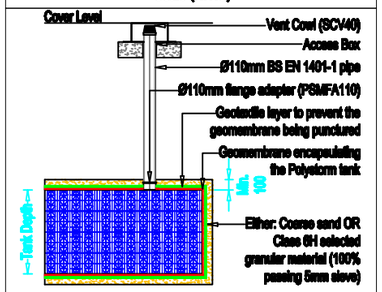


SECTION B-B



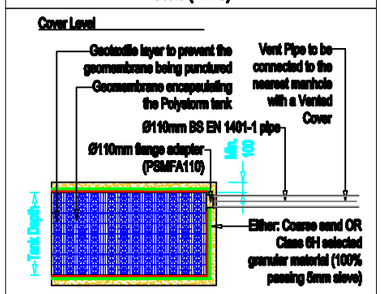
ATTENUATION TANK VENTILATION SYSTEM - OPTION 1)

Scale (N.T.S)



ATTENUATION TANK VENTILATION SYSTEM - OPTION 2)

Scale (N.T.S)



ATTENUATION TANK VENTILATION SYSTEM

Scale (N.T.S)

NOTES:-

1. THIS DRAWING DETAILS A PROPOSED POLYPIPE CIVILS & GREEN URBANISATION PRODUCT GENERAL ARRANGEMENT, REFLECTING OUR INTERPRETATION OF THE INFORMATION PROVIDED.
2. POLYPIPE CIVILS & GREEN URBANISATION (PCGU) PRODUCTS SHALL BE INSTALLED IN ACCORDANCE WITH PCGU RECOMMENDATIONS (REFER TO PCGU TECHNICAL GUIDANCE FOR FURTHER INFORMATION); GIVING DUE CONSIDERATION TO THE SITE SPECIFIC CONDITIONS AND REQUIREMENTS, IN ADDITION TO ANY REQUIREMENTS MANDATED BY THE RELEVANT APPROVING AND ULTIMATE OWNER ORGANISATIONS).
3. DO NOT SCALE, REFER TO FIGURED DIMENSIONS ONLY.
4. ALL DIMENSIONS IN MILLIMETRES, UNLESS OTHERWISE STATED.
5. ALL DIMENSIONS ARE NOMINAL AND MAY VARY WITHIN MANUFACTURING OR CONSTRUCTION TOLERANCES.
6. ALL SITE TEMPORARY AND ENABLING WORKS BY OTHERS.
7. THIS DRAWING IS INTENDED FOR GUIDANCE ONLY. CONFIRMATION OF THE INFORMATION CONTAINED WITHIN THIS DOCUMENT SHOULD BE SOUGHT FROM THE OVERSEEING ENGINEER(S) PRIOR TO THE COMMENCEMENT OF FINAL DESIGN OR CONSTRUCTION ACTIVITIES.
8. PLEASE REFER TO POLYSTORM & POLYSTORM LITE TECHNICAL GUIDE.
9. THE PROPOSED POLYSTORM STRUCTURE GENERAL ARRANGEMENT HAS BEEN BASED ON PROVIDING THE MINIMUM STRUCTURE VOLUME STATED ONLY. NO STRUCTURAL OR HYDRAULIC ASSESSMENT HAS BEEN MADE OF THE SUITABILITY OF THE PROPOSED POLYSTORM STRUCTURE FOR THE PROPOSED APPLICATION, NOR HOW IT WILL INTEGRATES INTO THE PROPOSED DRAINAGE SYSTEM.
10. ALL MEMBRANE JOINTS TO BE WELDED RATHER THAN GLUED.

R1	06/09/24	INLET PIPE CONNECTION LOCATION HAS CHANGED TO SUIT.

Notes :- All the Dimensions by Millimeters

KEYTEC INSTALLATION SERVICES

KEYTEC INSTALLATION SERVICES
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COWM TOP BUSINESS PARK
COWM TOP LANE
OL11 2PU
TEL: 01706 374416
EMAIL: TECHNICAL@KEYTEC.CO.UK

PROJECT

HAMMERSTONE ROAD DEPOT

ATTENUATION TANK

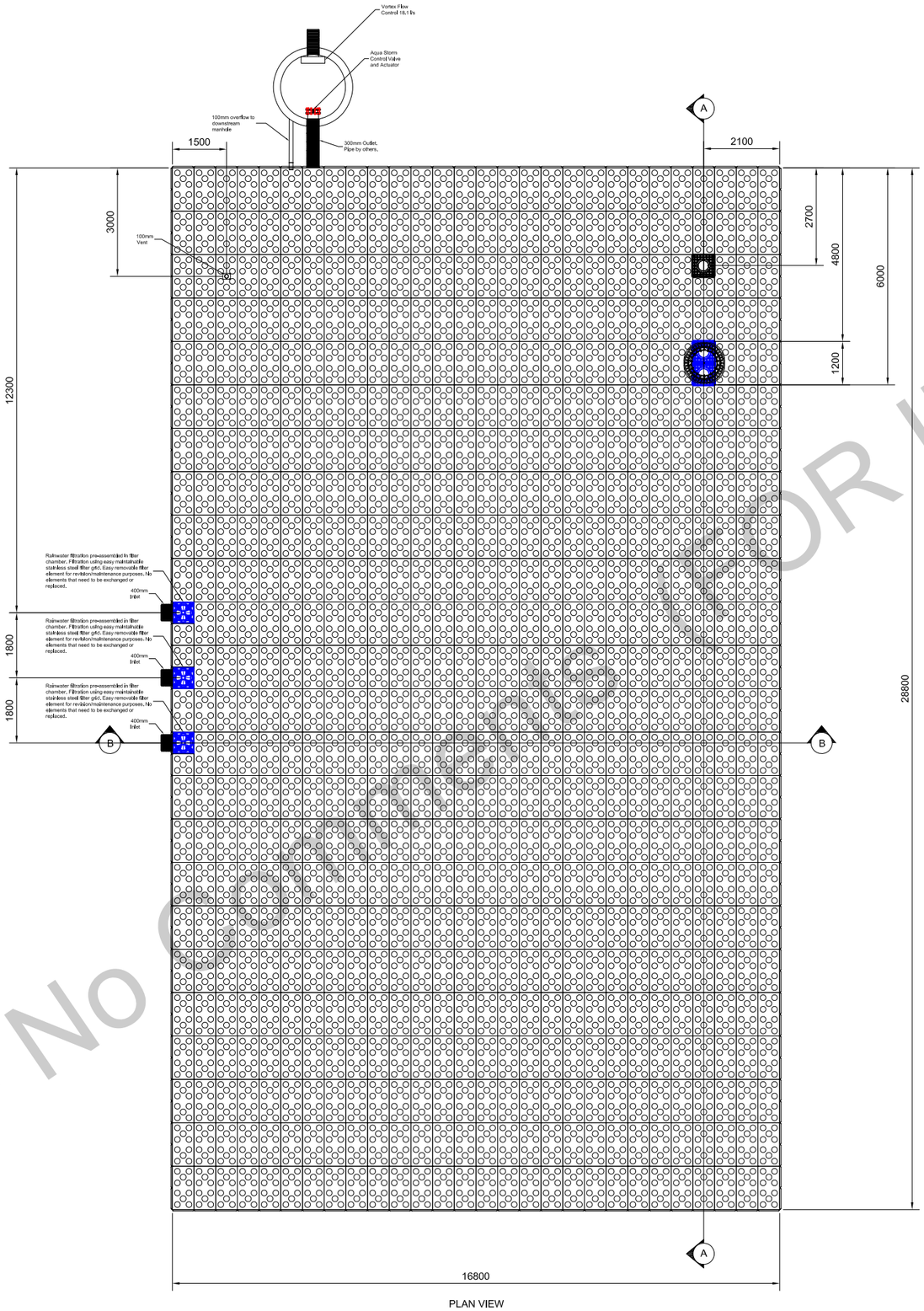
TITLE

DETAILS OF ATTENUATION/STORAGE TANK DETAILS USING POLYSTORM PSM1A UNITS.

Scale	Drawn	Checked
N.T.S.	AY	KD

Date	Drawing No.	Revision
14/06/2024	PSM - 6.0	R1

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PLAN VIEW

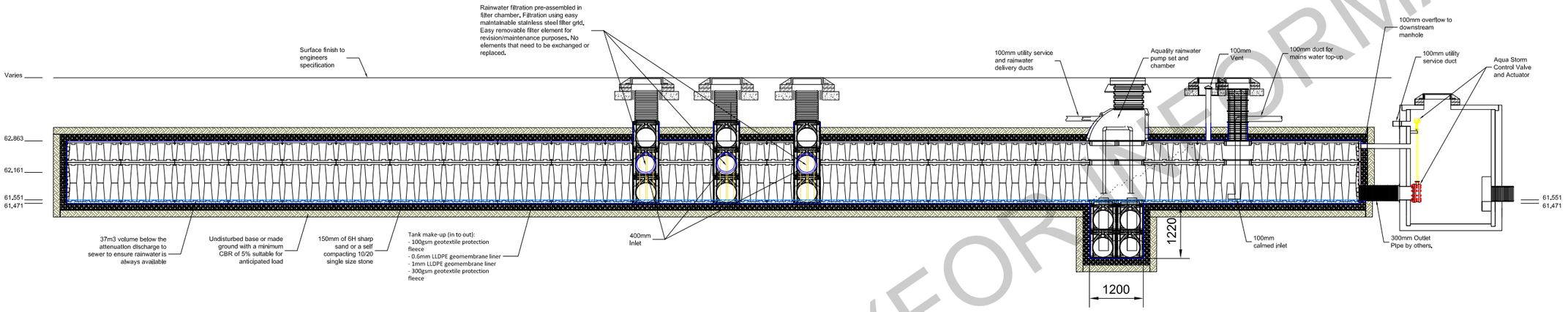
Project: Manchester - Hammerstone Road	
Title: Plantroom Layout Tank Layout	
System: **Geocellular Tank made from Aquality Storage Block SD** 28.8m x 16.8m x 1.392m	
Project-No: HRD-ABE-ZZ-ZZ-DR-M-5031	
Project state: S2	Date: 23/11/2023
Scale: NTS @A3	Revision: P03
Drawn by: AR	Checked by: CF

aquality
intelligent water management

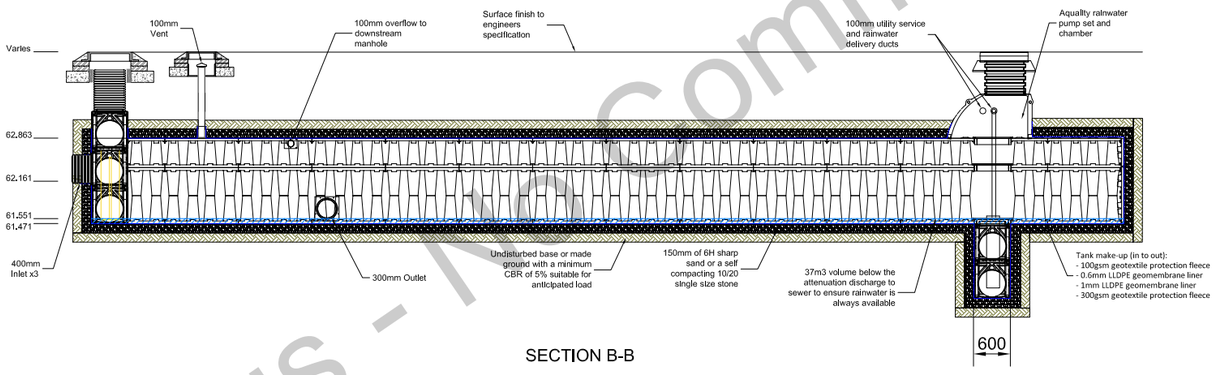
Aquality Trading & Consulting Ltd
6 Wadsworth Road
London UB6 7JJ
www.aqua-lity.co.uk
Tel.: +44 (0)20 8991 3725

A Status - No Comments (FOR INFORMATION)

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SECTION A-A



SECTION B-B

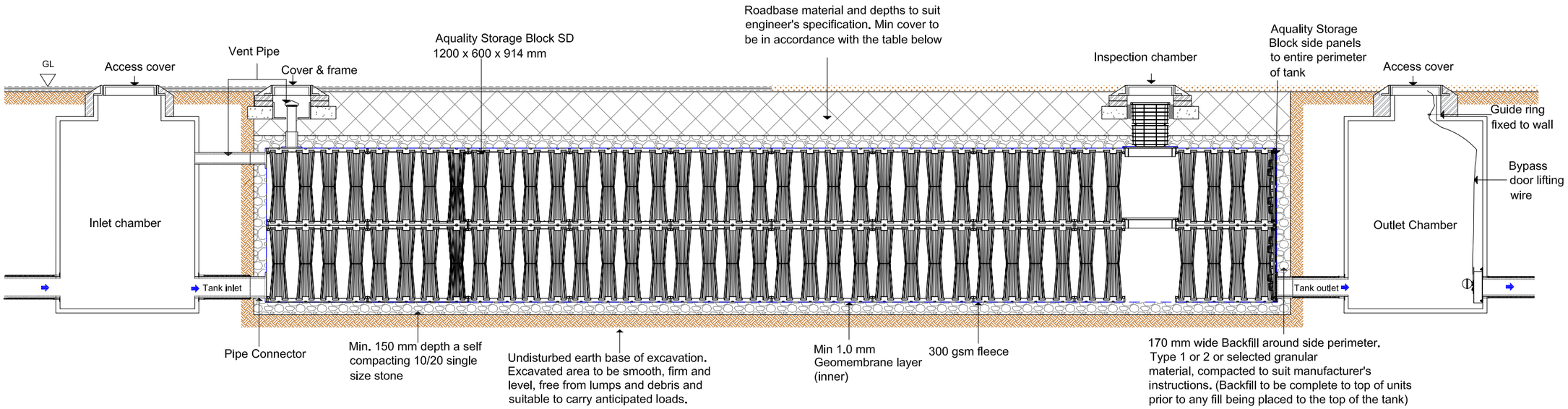
Project: Manchester - Hammerstone Road	
Title: Tank Layout	
System: **Geocellular Tank made from Aquality Storage Block SD** 28.8m x 16.8m x 1.392m	
Project-No: HRD-ABE-ZZ-ZZ-DR-M-5032	
Project state: S2	Date: 23/11/2023
Scale: NTS @A3	Revision: P03
Drawn by: AR	Checked by: CF

aquality
intelligent water management

Aquality Trading & Consulting Ltd
6 Wadsworth Road
London UB6 7JJ
www.aqua-lity.co.uk
Tel.: +44 (0)20 8991 3725

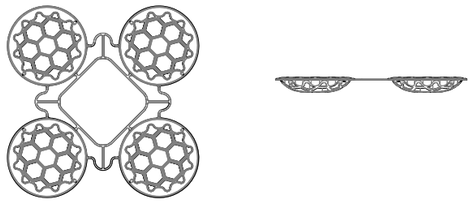
A Status - No Comments (FOR INFORMATION)

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Note:

Top cover shown below to be installed on top layer of Aquality Modules only.



Minimum cover depths (1) over the top of Aquality Geocellular	
Location	Minimum cover depth (m) (4)
Non-Trafficked areas i.e. Landscaping	0.5
Car parks, vehicle up to 2500kg gross mass	0.6
Car parks, occasional vehicle greater than 2500kg (3) gross mass	Please contact Aquality
Occasional HGV traffic up to 44000kg GVW (HA loading)	Please consult with Aquality

(1) Assumes 27 degree load distribution through fill material and overlaying surface asphalt or block paving
(2) Minimum cover depth to avoid accidental damage from gardening/landscaping work
(3) Occasional Trafficking by refuse collection or similar vehicles (typically one per week)
(4) Please check minimum frost cover depths for geographical location

Project:
Manchester - Hammerstone Road

Title:
Aquality Sorage Block SD attenuation

System:
Aquality Storage Block SD attenuation (on-line)

Project-No:
HRD-ABE-ZZ-ZZ-DR-M-5033

Project state:	Date:
S2	22/09/2023
Scale:	Revision:
NTS @A3	P01
Drawn by:	Checked by:
AR	CF

aquality
intelligent water management

Aquality Trading & Consulting Ltd
6 Wadsworth Road
London UB6 7JJ
www.aqua-lity.co.uk
Tel.: +44 (0)20 8991 3725

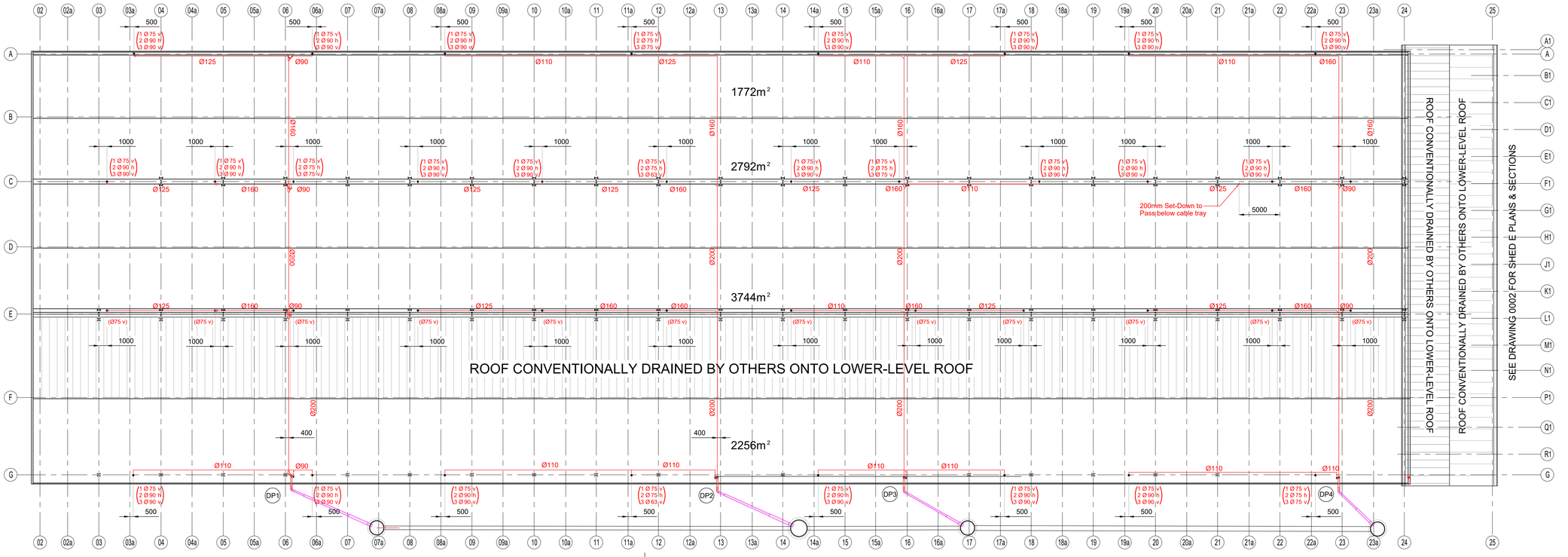
THIS DRAWING IS THE PROPERTY OF AQUALITY TRADING & CONSULTING LTD AND IS NOT TO BE COPIED IN PART OR WHOLE OR SHARED WITH THIRD PARTIES WITHOUT OUR WRITTEN PERMISSION.

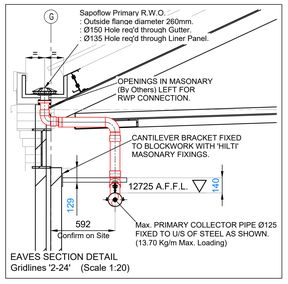
Appendix F

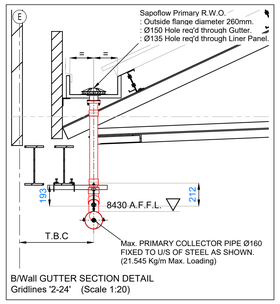
Sapoflow Details (Siphonic Drainage)

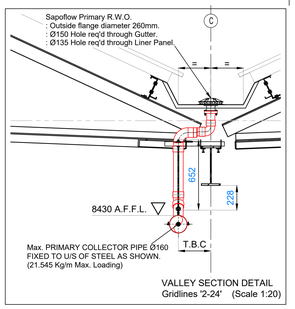
Vented Manhole Details

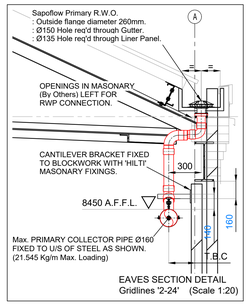
Rev P01 | Copyright © 2025 Curtins Consulting Ltd

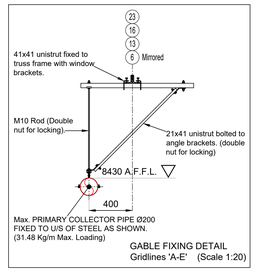


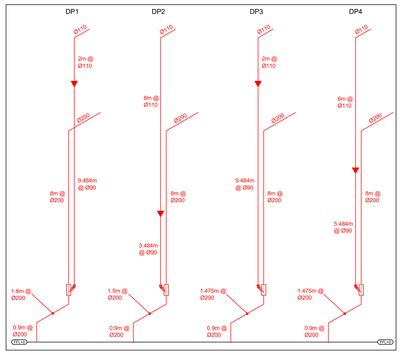


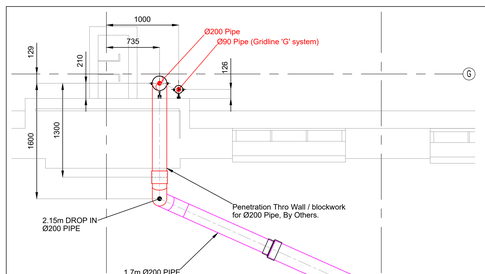


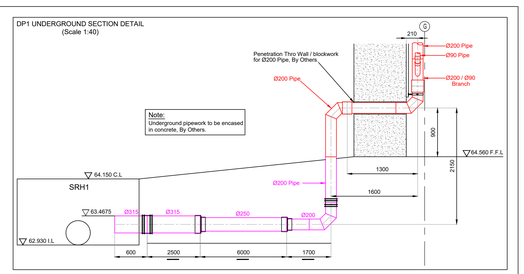


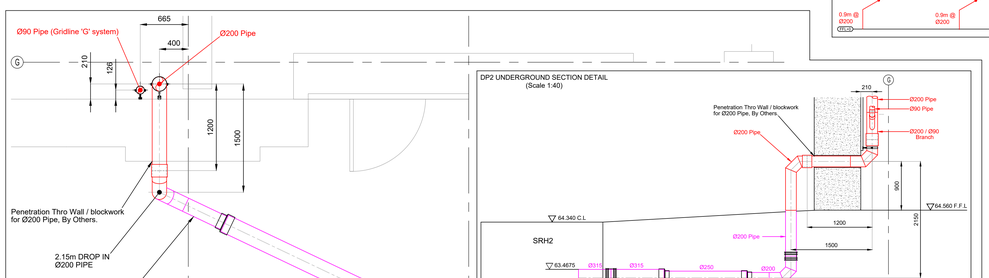












Construction

KEY REFERENCE :–
- Sapoflow Primary System R.W.O.
- Sapoflow Primary System Pipe Route.
- Sapoflow Primary Down Pipe.
- Sapoflow Primary Underground Pipe Route.

BRACKET SPACINGS & LOADINGS FOR H.D.P.E. PIPE SUPPORTED FROM MAIN STRUCTURE: e.g. Roof Purlin

PIPE DIAMETER (mm)	BRACKET SPACINGS (mm)	LOADING PER BRACKET	PIPE DIAMETER (mm)	BRACKET SPACINGS (mm)	LOADING PER BRACKET
#50	2000	6.76 Kg	#125	2000	27.40 Kg
#63	2000	9.07 Kg	#160	2000	43.09 Kg
#75	2000	11.68 Kg	#200	2000	62.96 Kg
#90	2000	15.58 Kg	#250	1500	73.71 Kg
#110	2000	21.87 Kg	#315	1500	120.0 Kg

BRACKET SPACINGS & LOADINGS FOR H.D.P.E. PIPE SUPPORTED FROM UNISTRUT CHANNEL: NOTE: 41x21 UNISTRUT FOR PIPES UP TO AND INCLUDING Ø160, 41X41 UNISTRUT Ø200 & ABOVE.

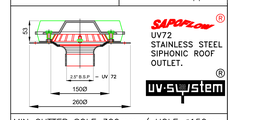
PIPE DIAMETER (mm)	BRACKET SPACINGS (mm)	LOADING PER BRACKET	PIPE DIAMETER (mm)	BRACKET SPACINGS (mm)	LOADING PER BRACKET
#50	1000	3.38 Kg	#125	1500	20.55 Kg
#63	1000	4.54 Kg	#160	2000	43.09 Kg
#75	1000	5.84 Kg	#200	2000	62.96 Kg
#90	1500	11.69 Kg	#250	2000	98.28 Kg
#110	1500	16.40 Kg	#315	2000	160.0 Kg

RAINFALL INTENSITY 212 mm/hr — #90 DENOTES PIPE DIAMETER. (#63) DENOTES TAIL PIPE DIAMETER.

DOWNPIPE NUMBER.	DIMENSION DATA.	DISCHARGE FLOW (l/s)	DISCHARGE VELOCITY (m/s)
212 mm/hr Primary Systems.			
DP1	Downpipe To F.F.L. See Isometric	155.53	2.34
DP2	Downpipe To F.F.L. See Isometric	155.53	2.34
DP3	Downpipe To F.F.L. See Isometric	155.53	2.34
DP4	Downpipe To F.F.L. See Isometric	155.53	2.34
DP5	Downpipe To F.F.L. See Isometric	77.73	2.90

REV	DATE	DESCRIPTION
C04	14/08/23	UG Details amended
C03	06/07/23	Pipe route along gridline 'F1' on DP4 system amended.
C02	02/06/23	UG Details amended
C01	02/05/23	DP Isometric & UG Section details amended
P07	27/04/23	Pipe sizes & UG details added for DP's 3 & 4
P06	17/03/23	Pipe flipped on Grid 'C', were 'B' side now 'D'
P05	14/03/23	Pipe sizes & UG details added for DP's 1 & 2
P04	21/02/23	Roof Area's added
P03	27/01/23	Sections amended for grids '25' & '29'
P02	27/01/23	Issued for 'Co-Ordination'
P01	19/12/22	Issued for Rainwater Outlet Positions

UNISTRUT CHANNEL PIPE FIXING — FIXING TOP OF DOWNPIPE



MIN GUTTER SOLE 300mm / HOLE ø150mm

SAPOFLOW®
Siphonic Roof Drainage Systems.

SAPOFLOW LIMITED , FALL BANK INDUSTRIAL ESTATE , DODWORTH , BARNSLEY , SOUTH YORKSHIRE , S75 3LS .
Telephone 01226 297200
Fax 01226 204038
E-mail info@sapoflow.com
Website www.sapoflow.com

PROJECT
ANCHORAGE 2
HAMMERSTONE ROAD
SALFORD QUAYS

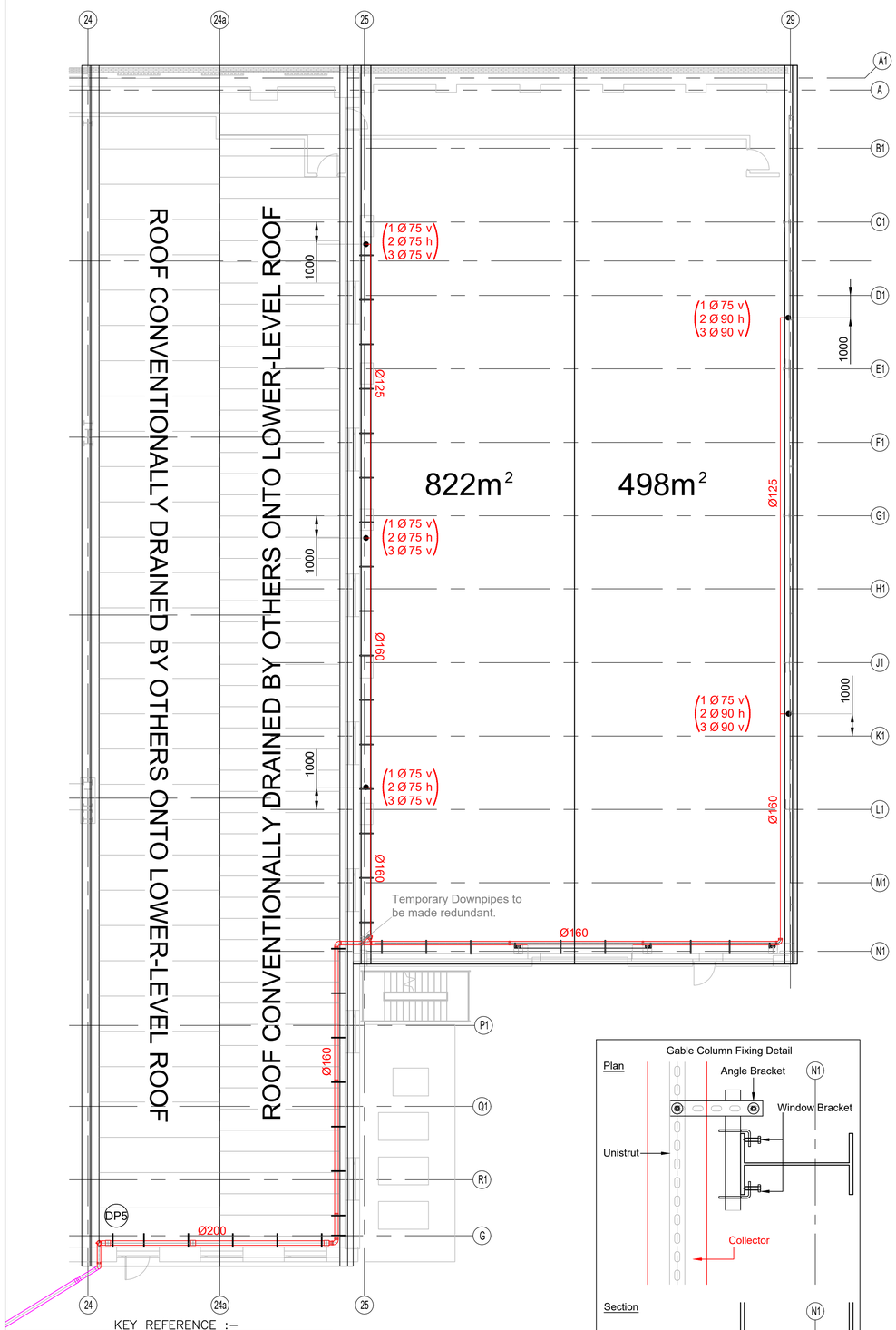
TITLE
SIPHONIC ROOF DRAINAGE PLAN

DESIGN	DRAWN	Checked
W. Beaumont	W.B /AutoCAD.	T.C
SCALE 1:200 @ A0	DATE 16/12/22	
PROJECT No. 21397	DRAWING No. HRD-SAP-01-RL-DR-X-0001	REV C04

Do not scale from this drawing. Use figured dimensions only. All dimensions are to be verified on site.
Pipe, outlet and fitting sizes and dimensions are subject to change to take account of individual hydraulic performance.
The drawing has been produced utilising information supplied by others for which Sapoflow Ltd can accept no responsibility.
Any alterations to the scheme shown are to be notified to Sapoflow Ltd prior to commencement of installation
IF IN DOUBT, PLEASE CONTACT.
THIS DRAWING IS COPYRIGHT & MAY NOT BE REPRODUCED WITHOUT THE PERMISSION OF SAPOFLOW LTD

SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION
In addition to the Hazards / Risks normally associated with the type of work detailed on this drawing, note the following:
1. Please refer to the O&M Manual for additional HSE Information

UK Representative of UV-System
Registered in England No. 2717962
Document Ref: SAP-D00111



KEY REFERENCE :–

- ● Sapoflow Primary System R.W.O.
- Sapoflow Primary System Pipe Route.
- ⊗ Sapoflow Primary Down Pipe.
- Sapoflow Primary Underground Pipe Route.

Do not scale from this drawing. Use figured dimensions only. All dimensions are to be verified on site.

Pipe, outlet and fitting sizes and dimensions are subject to alteration in order to ensure optimum hydraulic performance.

This drawing has been produced utilising information supplied by others for which Sapoflow Ltd can accept no responsibility.

Any alterations to the scheme shown are to be notified to Sapoflow Ltd prior to commencement of installation

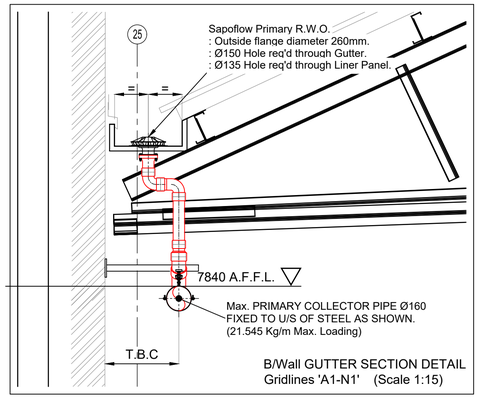
~~IF IN DOUBT, PLEASE CONTACT~~

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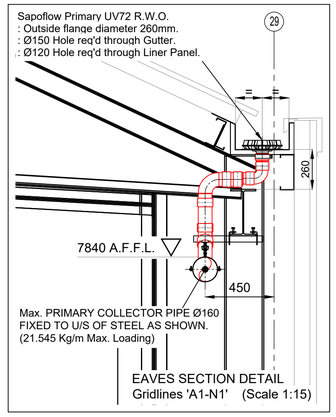
SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION

In addition to the Hazards / Risks normally associated with the type of work detailed on this drawing, note the following:

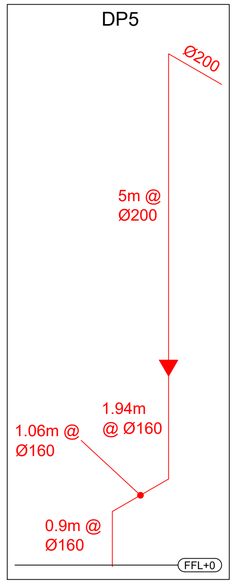
1. Please refer to the O&M Manual for additional HSE Information

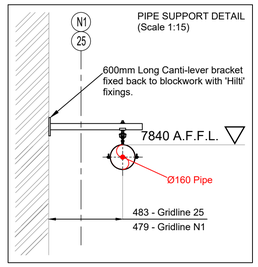


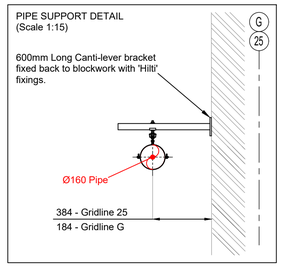
B/Wall GUTTER SECTION DETAIL
Gridlines 'A1-N1' (Scale 1:15)

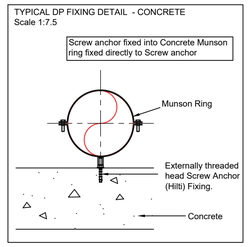


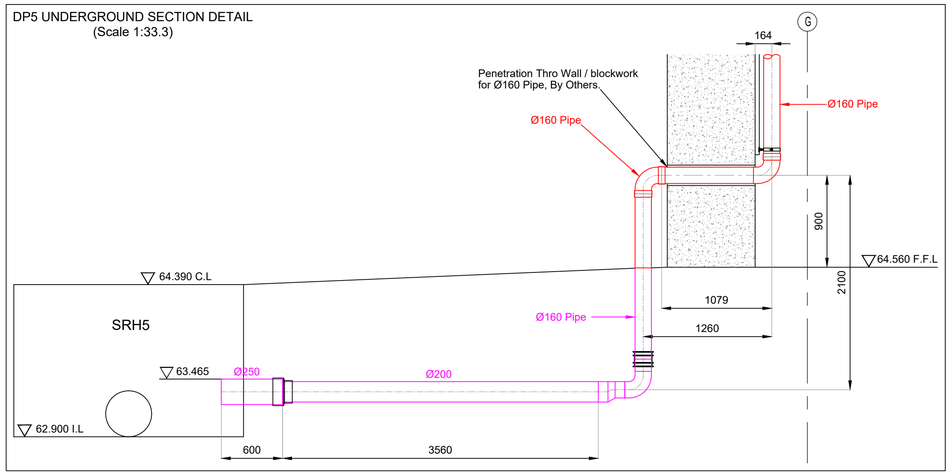
EAVES SECTION DETAIL
Gridlines 'A1-N1' (Scale 1:15)











BRACKET SPACINGS & LOADINGS FOR H.D.P.E. PIPE SUPPORTED FROM MAIN STRUCTURE: e.g. Roof Purlin

PIPE DIAMETER (mm)	BRACKET SPACINGS (mm)	LOADING PER BRACKET	PIPE DIAMETER (mm)	BRACKET SPACINGS (mm)	LOADING PER BRACKET
ø50	2000	6.76 Kg	ø125	2000	27.40 Kg
ø63	2000	9.07 Kg	ø160	2000	43.09 Kg
ø75	2000	11.68 Kg	ø200	2000	62.96 Kg
ø90	2000	15.58 Kg	ø250	1500	73.71 Kg
ø110	2000	21.87 Kg	ø315	1500	120.0 Kg

BRACKET SPACINGS & LOADINGS FOR H.D.P.E. PIPE SUPPORTED FROM UNISTRUT CHANNEL: NOTE: 41x21 UNISTRUT FOR PIPES UP TO AND INCLUDING Ø160, 41X41 UNISTRUT Ø200 & ABOVE.

PIPE DIAMETER (mm)	BRACKET SPACINGS (mm)	LOADING PER BRACKET	PIPE DIAMETER (mm)	BRACKET SPACINGS (mm)	LOADING PER BRACKET
ø50	1000	3.38 Kg	ø125	1500	20.55 Kg
ø63	1000	4.54 Kg	ø160	2000	43.09 Kg
ø75	1000	5.84 Kg	ø200	2000	62.96 Kg
ø90	1500	11.69 Kg	ø250	2000	98.28 Kg
ø110	1500	16.40 Kg	ø315	2000	160.0 Kg

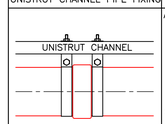
RAINFALL INTENSITY: 212 mm/hr

ø90 DENOTES PIPE DIAMETER.
(ø63) DENOTES TAIL PIPE DIAMETER.

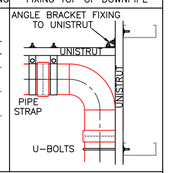
DOWNPIPE NUMBER.	DIMENSION DATA.	DISCHARGE FLOW (l/s)	DISCHARGE VELOCITY (m/s)
212 mm/hr Primary Systems.			
DP5	Downpipe To F.F.L. See Isometric	77.73	2.90

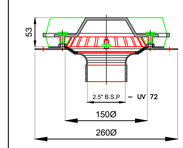
REV	DATE	DESCRIPTION
C05	05/09/23	UG Details amended
C04	14/08/23	UG Details amended
C03	02/06/23	Pipe route extended + UG Details added
C02	21/02/23	Roof Area's added
C01	03/02/23	Issued for Construction

UNISTRUT CHANNEL PIPE FIXING



FIXING TOP OF DOWNPIPE





SAPOFLOW ®
UV72
STAINLESS STEEL
SIPHONIC ROOF
OUTLET.
® uv-system

MIN GUTTER SOLE 300mm / HOLE ø150mm

SAPOFLOW ®
Siphonic Roof Drainage Systems.

SAPOFLOW LIMITED ,
FALL BANK INDUSTRIAL ESTATE ,
DODWORTH , BARNSLEY ,
SOUTH YORKSHIRE , S75 3LS .

Telephone 01226 297200
Fax 01226 204038
E–mail info@sapoflow.com
Website www.sapoflow.com

PROJECT
ANCHORAGE 2
HAMMERSTONE ROAD
SALFORD QUAYS

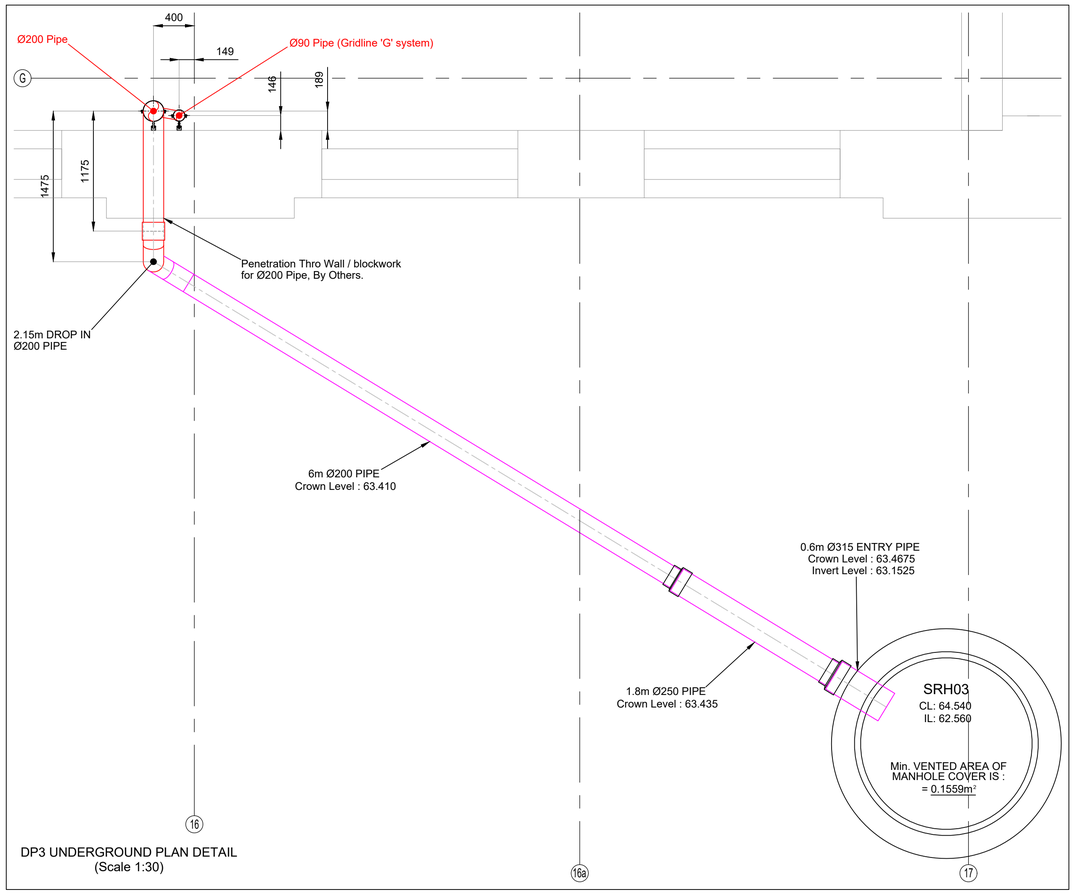
TITLE
SHED E
SIPHONIC ROOF DRAINAGE PLAN

DESIGN	DRAWN	Checked
W. Beaumont	W.B /AutoCAD.	T.G

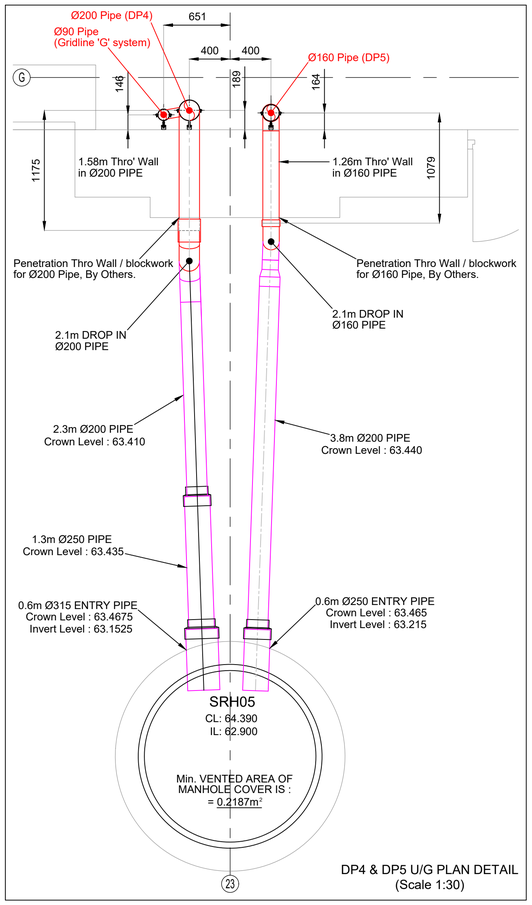
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PROJECT No.	DRAWING No.	REV
21397	HRD–SAP–01–RL–DR–X–0002	C05

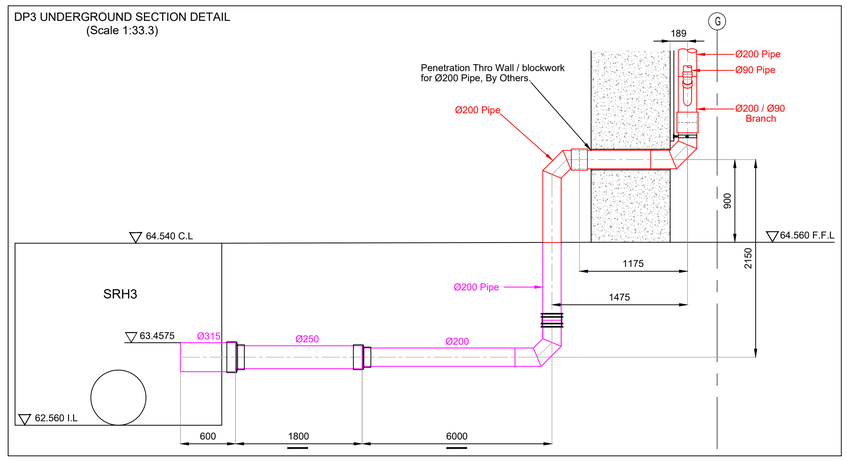
UK Representative of UV–System
Registered in England No. 2717962

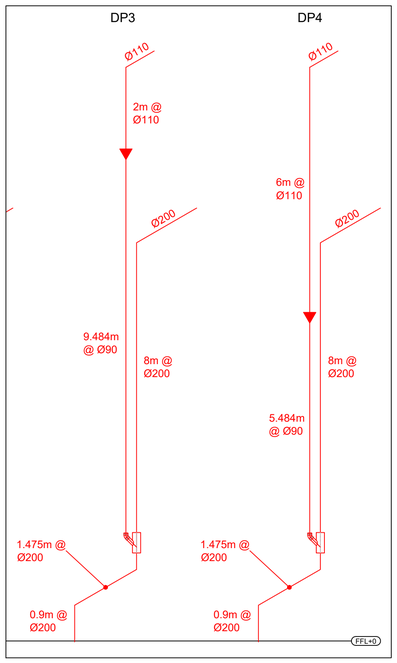


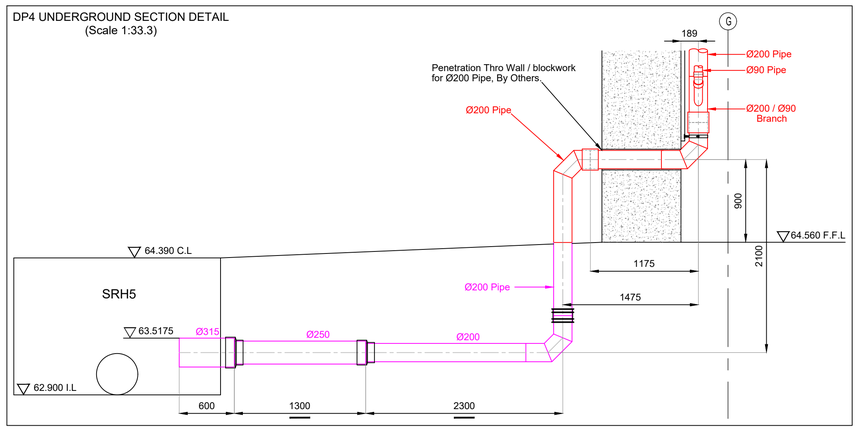
DP3 UNDERGROUND PLAN DETAIL
(Scale 1:30)



DP4 & DP5 U/G PLAN DETAIL
(Scale 1:30)







Construction

KEY REFERENCE :–

- Sapoflow Primary System R.W.O.
- Sapoflow Primary System Pipe Route.
- ⊗ Sapoflow Primary Down Pipe.
- Sapoflow Primary Underground Pipe Route.

BRACKET SPACINGS & LOADINGS FOR H.D.P.E. PIPE SUPPORTED FROM MAIN STRUCTURE: e.g. Roof Purlin

PIPE DIAMETER (mm)	BRACKET SPACINGS (mm)	LOADING PER BRACKET	PIPE DIAMETER (mm)	BRACKET SPACINGS (mm)	LOADING PER BRACKET
ø50	2000	6.76 Kg	ø125	2000	27.40 Kg
ø63	2000	9.07 Kg	ø160	2000	43.09 Kg
ø75	2000	11.68 Kg	ø200	2000	62.96 Kg
ø90	2000	15.58 Kg	ø250	1500	73.71 Kg
ø110	2000	21.87 Kg	ø315	1500	120.0 Kg

BRACKET SPACINGS & LOADINGS FOR H.D.P.E. PIPE SUPPORTED FROM UNISTRUT CHANNEL: NOTE: 41x21 UNISTRUT FOR PIPES UP TO AND INCLUDING Ø160, 41X41 UNISTRUT Ø200 & ABOVE.

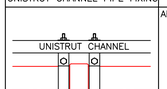
PIPE DIAMETER (mm)	BRACKET SPACINGS (mm)	LOADING PER BRACKET	PIPE DIAMETER (mm)	BRACKET SPACINGS (mm)	LOADING PER BRACKET
ø50	1000	3.38 Kg	ø125	1500	20.55 Kg
ø63	1000	4.54 Kg	ø160	2000	43.09 Kg
ø75	1000	5.84 Kg	ø200	2000	62.96 Kg
ø90	1500	11.69 Kg	ø250	2000	98.28 Kg
ø110	1500	16.40 Kg	ø315	2000	160.0 Kg

RAINFALL INTENSITY 212 mm/hr — ø90 DENOTES PIPE DIAMETER. (ø63) DENOTES TAIL PIPE DIAMETER.

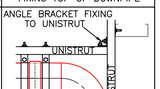
DOWNPIPE NUMBER.	DIMENSION DATA.	DISCHARGE FLOW (l/s)	DISCHARGE VELOCITY (m/s)
212 mm/hr Primary Systems.			
DP3	Downpipe To F.F.L. See Isometric	155.53	2.34
DP4	Downpipe To F.F.L. See Isometric	155.53	2.34

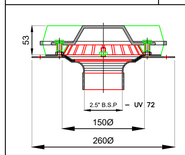
REV	DATE	DESCRIPTION
C05	05/09/23	UG Details amended
C04	14/08/23	UG Details amended
C03	10/07/23	Status amended on portal
C02	02/06/23	UG Details amended
C01	02/05/23	DP Isometric & UG Section details amended
P01	03/02/23	Issued for Comment/Approval

UNISTRUT CHANNEL PIPE FIXING



FIXING TOP OF DOWNPIPE





SAPOFLOW®
UV72
STAINLESS STEEL
SIPHONIC ROOF
OUTLET.
UV-SYSTEM®

MIN GUTTER SOLE 300mm / HOLE ø150mm

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Siphonic Roof Drainage Systems.

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SOUTH YORKSHIRE , S75 3LS .
Telephone 01226 297200
Fax 01226 204038
E–mail info@sapoflow.com
Website www.sapoflow.com

PROJECT
ANCHORAGE 2
HAMMERSTONE ROAD
SALFORD QUAYS

TITLE
SIPHONIC UNDERGROUND DRAINAGE DETAILS

DESIGN	DRAWN	Checked
W. Beaumont	W.B /AutoCAD.	T.G

SCALE	DATE
1:30	27/04/23

PROJECT No.	DRAWING No.	REV
21397	HRD–SAP–01–RL–DR–X–0003	C05

Founding member of Sustainable Flow Solutions
Siphonic roof drainage association
UK Representative of UV-System
Registered in England No. 2717962
Document Ref: SAP.0001(1)

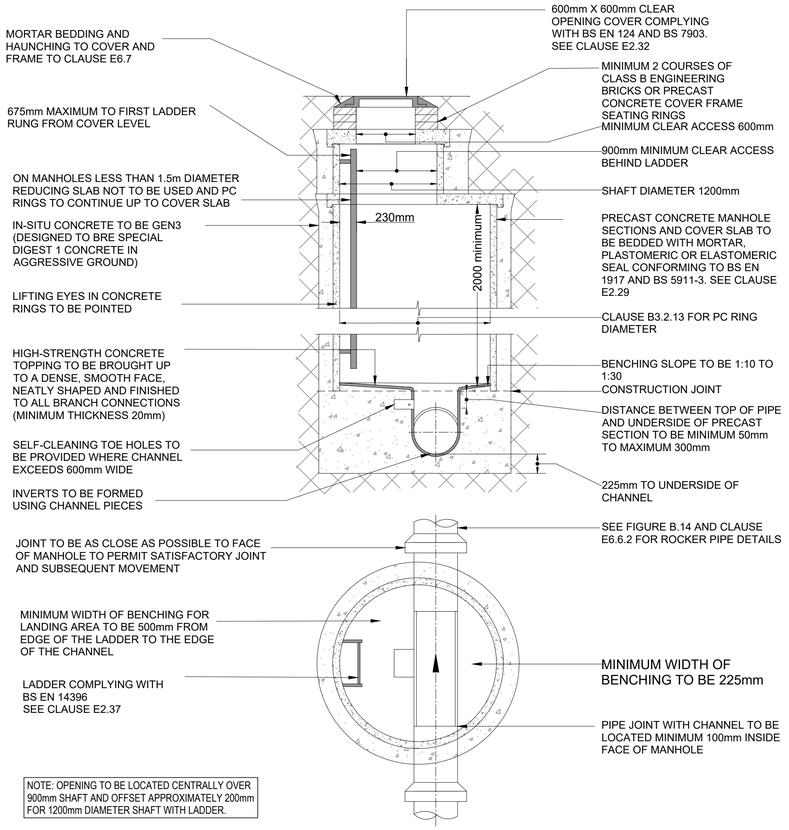
Do not scale from this drawing. Use figured dimensions only. All dimensions are to be verified on site.
Pipe, outlet and fitting sizes and dimensions are subject to alteration in order to ensure optimum hydraulic performance.
This drawing has been produced utilising information supplied by others for which Sapoflow Ltd can accept no responsibility.
Any alterations to the scheme shown are to be notified to Sapoflow Ltd prior to commencement of installation
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SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION

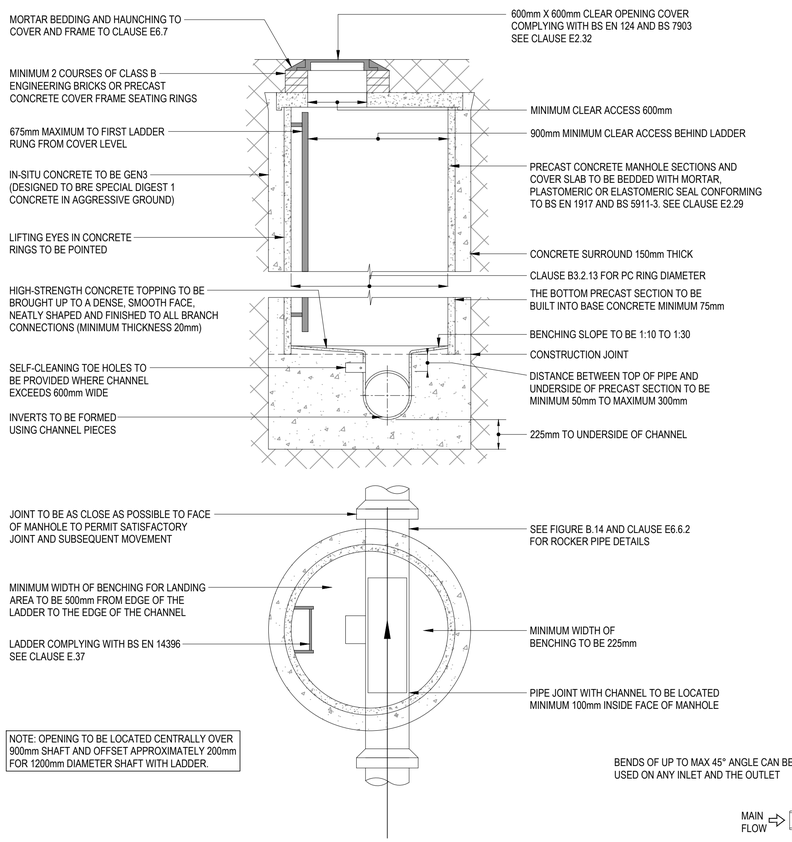
In addition to the Hazards / Risks normally associated with the type of work detailed on this drawing, note the following:

1. Please refer to the O&M Manual for additional HSE Information



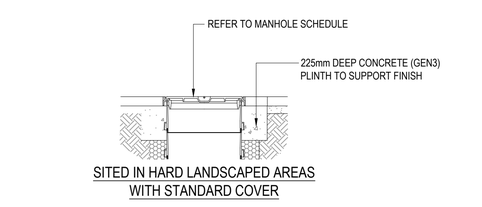
NOTE: OPENING TO BE LOCATED CENTRALLY OVER 900mm SHAFT AND OFFSET APPROXIMATELY 200mm FOR 1200mm DIAMETER SHAFT WITH LADDER.

TYPICAL MANHOLE DETAIL - TYPE A1
(DEPTH FROM COVER TO SOFFIT OF PIPE 3m TO 6m)

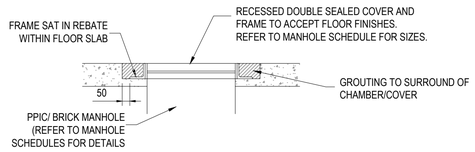


NOTE: OPENING TO BE LOCATED CENTRALLY OVER 900mm SHAFT AND OFFSET APPROXIMATELY 200mm FOR 1200mm DIAMETER SHAFT WITH LADDER.

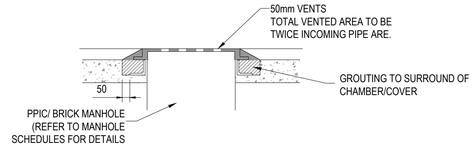
TYPICAL MANHOLE DETAIL - TYPE A2
(DEPTH FROM COVER TO SOFFIT OF PIPE 3m TO 6m)



SITED IN HARD LANDSCAPED AREAS
WITH STANDARD COVER

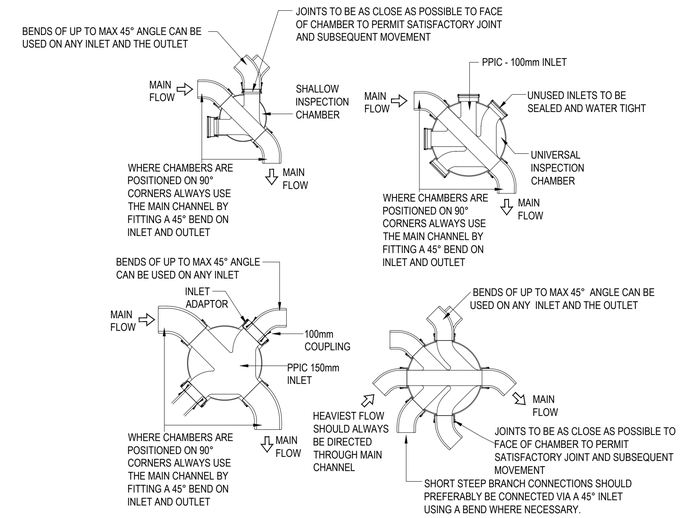


INTERNAL COVER DETAIL

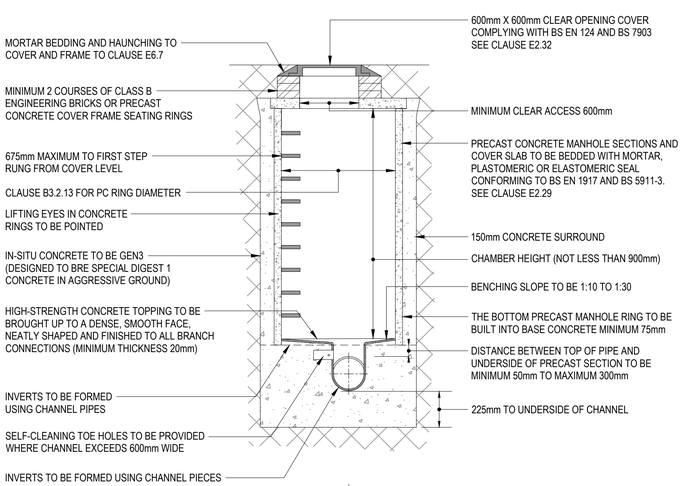


VENTED COVER DETAIL

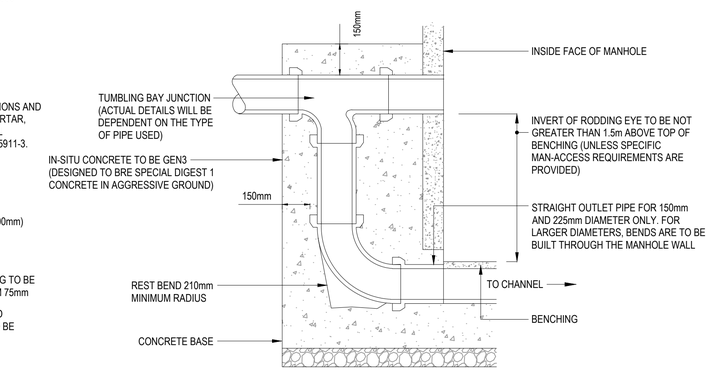
TYPICAL INSPECTION CHAMBER COVER DETAILS



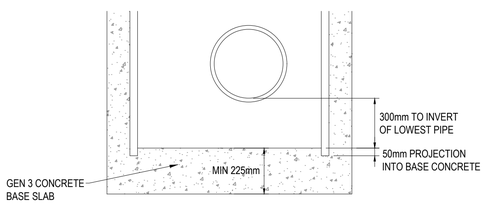
INSPECTION CHAMBER BASE DETAILS



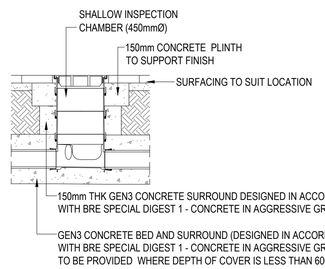
TYPICAL MANHOLE DETAIL - TYPE B
(MAXIMUM DEPTH FROM COVER TO SOFFIT OF PIPE 3.0 m)



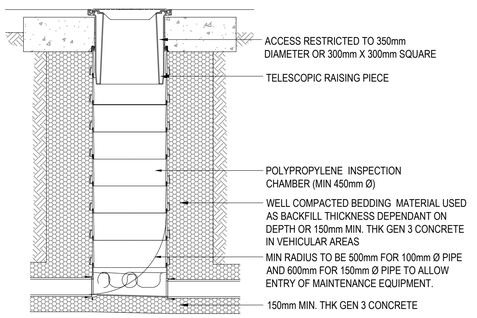
EXTERNAL VERTICAL BACKDROP



CATCH PIT DETAIL



SHALLOW INSPECTION CHAMBER
MAX DEPTH 0.6m



DEEP INSPECTION CHAMBER
DEPTHS BETWEEN 1.2m AND 3.0m

TYPICAL INSPECTION CHAMBER DETAILS - PPIC

GENERAL NOTES:

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTS AND ENGINEERS DRAWINGS AND SPECIFICATIONS.
2. DO NOT SCALE THIS DRAWING. ANY AMBIGUITIES, OMISSIONS AND ERRORS ON DRAWINGS SHALL BE BROUGHT TO THE ENGINEERS ATTENTION IMMEDIATELY. ALL DIMENSIONS MUST BE CHECKED / VERIFIED ON SITE.
3. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS NOTED OTHERWISE.
4. FOR GENERAL NOTES REFER TO DRAWING.

Rev:	Description:	Date:	By:	Chkd:
C02	STAGE 5 ISSUE	24.09.24	JC	ATL
P05	VENTED COVER DETAIL ADDED	29.04.24	JC	ATL
P04	UPDATED FOR NEW TENDER	02.02.24	ATL	MW
C01	CONSTRUCTION ISSUE	23.09.22	ATL	MW
P03	STAGE 4 ISSUE	09/04/21	MW	MW
P02	STAGE 3 ISSUE	18/11/20	MW	MW
P01	STAGE 3 ISSUE	29/01/19	MW	CG

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Status:
STAGE 5

Project:
HAMMERSTONE ROAD DEPOT

Drg Title:
DRAINAGE DETAILS
SHEET 1

Project No:	Size:	Date:	Drawn By:	Designed By:	Checked By:
068065	A1	29/01/19	MW	MW	CG
	Scale: 1:NTS				

Project Code: Originator: Zone: Level: Type: Discipline: Category / Number: Rev.

HRD - CUR - XX - ZZ - DR - C - 92520 -C02

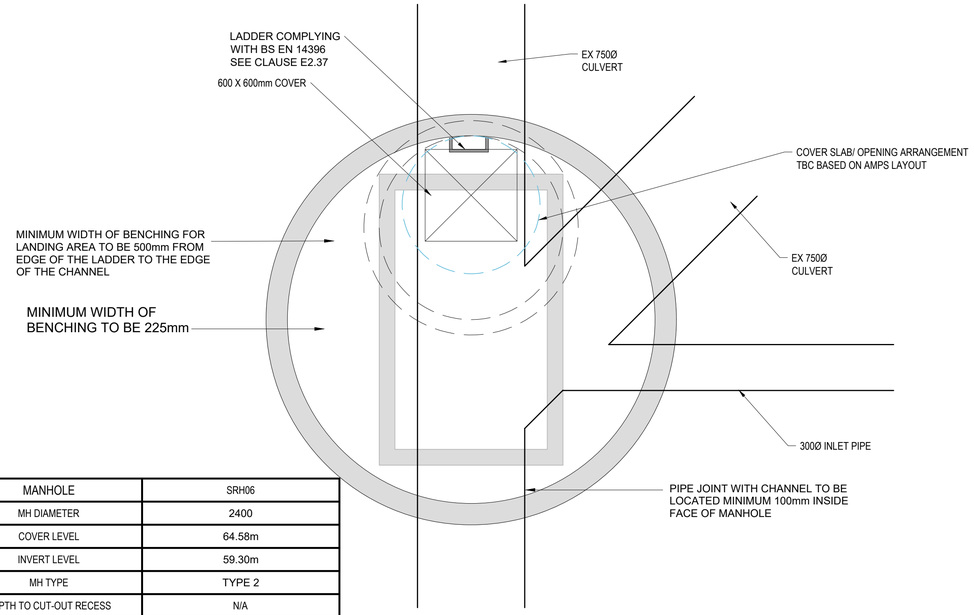
\\ma-fs-1P\Projects\068001 - 069000\068065 - Hammerstone Road Depot\04 Production\B Models & Drawings_Civil C\C4D\92(

Appendix G

Connection Manhole Details

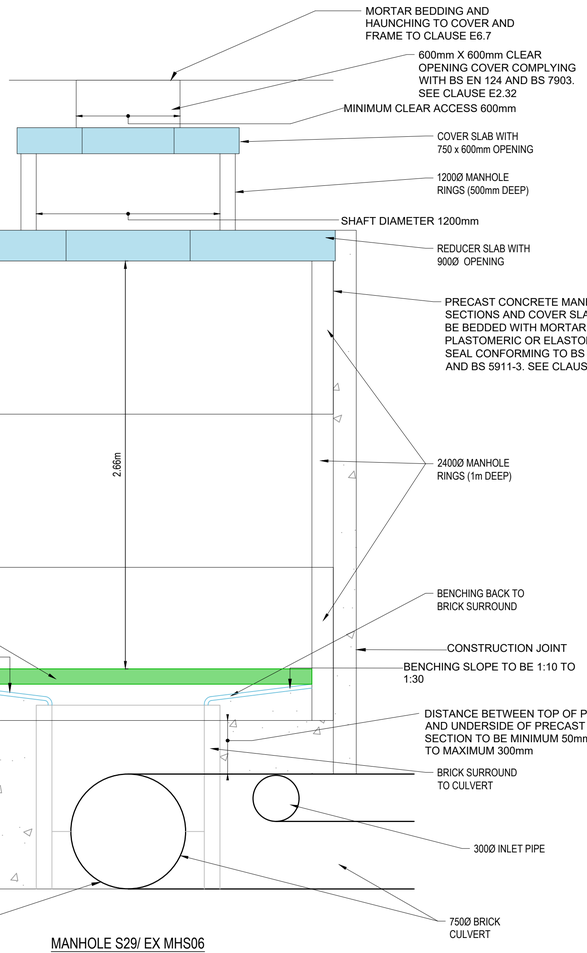
Connection Manhole Method Statement

Connection Manhole Risk Assessment

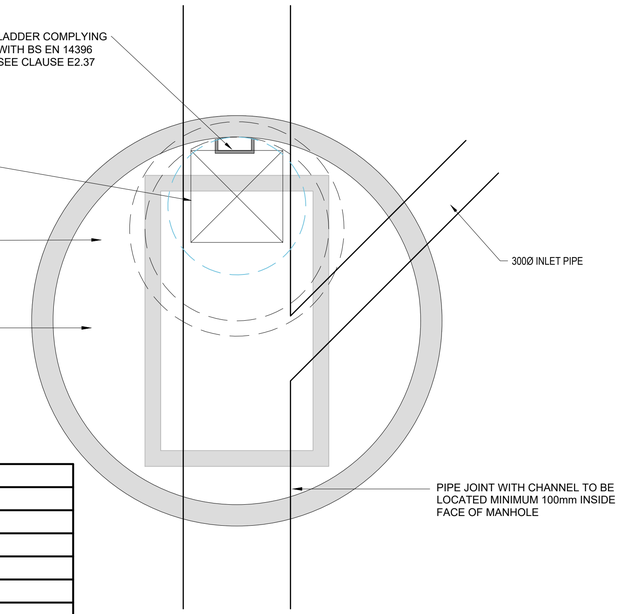


MANHOLE	SRH06
MH DIAMETER	2400
COVER LEVEL	64.58m
INVERT LEVEL	59.30m
MH TYPE	TYPE 2
DEPTH TO CUT-OUT RECESS	N/A
DEPTH TO SOFFIT	4530mm
COVER SIZE	600x600mm
COVER DEPTH	150mm
COVER SPEC	D400
LADDER OR DOUBLE STEPS	LADDER
SAFETY CHAIN	N/A - AMPS SYSTEM
SAFETY RAILS	N/A - AMPS SYSTEM
INVERT ACCESS STEP	N/A - AMPS SYSTEM
HOLE SIZE IN COVER SLAB	750X600 ECCENTRIC OPENING

MANHOLE S29/ EX MHS06
PLAN VIEW

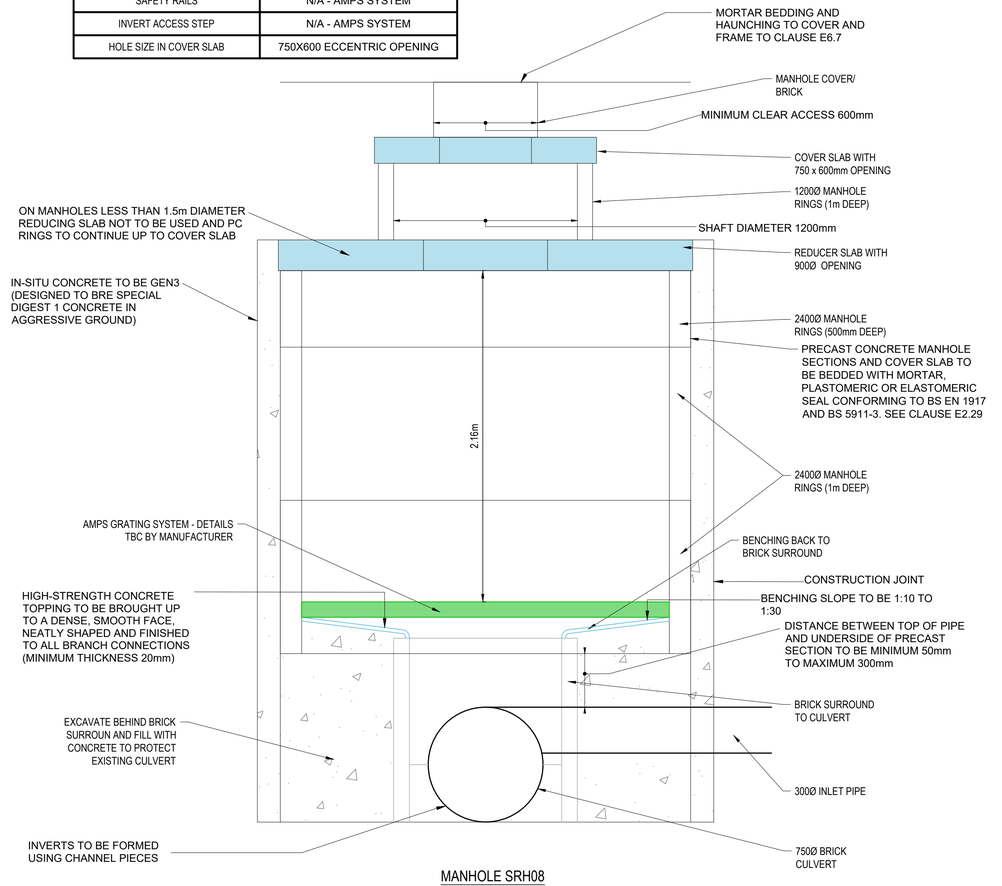


MANHOLE S29/ EX MHS06
SECTION



MANHOLE	SRH08
MH DIAMETER	2400
COVER LEVEL	64.57m
INVERT LEVEL	59.74m
MH TYPE	TYPE 2
DEPTH TO CUT-OUT RECESS	N/A
DEPTH TO SOFFIT	4080mm
COVER SIZE	600x600mm
COVER DEPTH	150mm
COVER SPEC	D400
LADDER OR DOUBLE STEPS	LADDER
SAFETY CHAIN	N/A - AMPS SYSTEM
SAFETY RAILS	N/A - AMPS SYSTEM
INVERT ACCESS STEP	N/A - AMPS SYSTEM
HOLE SIZE IN COVER SLAB	750X600 ECCENTRIC OPENING

MANHOLE SRH08
PLAN VIEW



MANHOLE SRH08
SECTION

GENERAL NOTES:

1. DO NOT SCALE THIS DRAWING. ANY AMBIGUITIES, OMISSIONS AND ERRORS ON DRAWINGS SHALL BE BROUGHT TO THE ENGINEERS ATTENTION IMMEDIATELY. ALL DIMENSIONS MUST BE CHECKED / VERIFIED ON SITE.
2. DESIGN BASED ON TOPOGRAPHICAL SURVEY AND CCTV SURVEY INFORMATION AVAILABLE AT THE TIME OF DESIGN.
3. ALL DIMENSIONS ARE IN METRES AND LEVELS IN METRES ABOVE ORDNANCE DATUM UNLESS OTHERWISE NOTED.

Rev:	Description:	Date:	By:	Chkd:
P03	ANNOTATION ADDED	29.04.24	JC	ATL
P02	UPDATED FOR NEW TENDER	02.02.24	ATL	MW
P01	ISSUED FOR INFORMATION	23.11.23	KS	ATL

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Status:
STAGE 5

Project:
HAMMERSTONE ROAD DEPOT

Drg Title:
DRAINAGE DETAILS
SHEET 8
CONNECTIONS TO CULVERT

Project No:	Size:	Date:	Drawn By:	Designed By:	Checked By:
068065	A1	27/11/23	KS	KS	ATL
	Scale: 1:20				

Project Code:	Originator:	Zone:	Level:	Type:	Discipline:	Category / Number:	Rev:
HRD	- CUR	- XX	- ZZ	- DR	- C	- 92-528	- P03

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S22	METHOD STATEMENT

CONTRACT:	Hammerstone Road	CONTRACT NO:	232	DATE:	30.10.23.

METHOD STATEMENT No.	014	REV.	B
TITLE	Deep Drainage	LOCATION	Higher Carpark
START DATE	30.10.23.	DURATION	36 weeks

ACCEPTANCE

1. All operatives to wear appropriate PPE for task ahead.
2. If unsure of any aspect of the works, cease works and seek advice from your supervisor, if systems of work change, then RAMS to be updated in accordance with the change.
3. All operatives to have read, understood and signed the method statement.

DESCRIPTION AND METHODOLOGY OF WORKS

Prior to Works

1. Operatives' inductions will be booked in on the M-Site System by the Adana Manager the previous day.
2. Operatives will complete the online pre-enrolment prior to arriving on site.
3. Morgan Sindall site induction will be attended for Adana personnel before any works commence.
4. Working hours will be 7.30 until 17.00.
5. Barriers will be in place outside to segregate the works area.
6. Permit to Excavate will be in place for any excavation works.
7. Area will be CAT scanned and any services exposed by hand.
8. Daily Risk Assessments / Briefings will be carried out by the manager/ supervisor at the start of each day.
9. PPE will be Boots, Vest, Hardhat, Gloves and Glasses as standard.
10. Every Three weeks, our Safety Officer will carry out an on- site safety report.

Access, Deliveries and Storage

11. Access to Site will be via the Morgan Sindall traffic route through the MCC car park.
12. All deliveries will be co-ordinated with Morgan Sindall and the MCC Gate Man at the morning briefing.
13. We will form a compound / Lay down area as per agreed Location Plan
14. Material storage area will be segregated with Barriers.
15. Deliveries will be always supervised by a competent Banks man (entering, unloading and leaving).
16. All deliveries where people must enter the back of the wagon must have edge protection set up. No operatives are to climb onto the back of a delivery wagon without edge protection.
17. Some materials or items will be off loaded with a Hiab before offloading can commence, a copy of the drivers Hiab certificate, will be available in his cab.
18. Where deliveries are to be offloaded with the excavator, lifting plan will be read and understood by all involved.
19. When loading materials into excavations, operatives must remain out of the excavation, until the materials are within 500mm of the bottom of the excavation.
20. Work and Storage areas will be thoroughly tidied as required and at the end of each shift.

Site Contacts:

Site Manager: Neil Kirton neil.kirton@adanaconstruction.com

General Rules

1) Permit to dig obtained and cat scan of area to be carried out prior to breaking ground by Trained operatives.
2) If excavations are deemed to bit at risk of containing asbestos, a Watching Brief will be present (trained in asbestos awareness) to comply with the Asbestos Management Plan.
3) Any known services to be exposed by hand or with Vac Ex, no excavation within 500mm of known or identified services.
4) Excavation inspections carried out daily prior to commencing.
5) Safe start briefing to be carried out daily.
6) Excavations will be segregated with double clipped Herras fencing with warning signs.
7) No operatives are to be below materials being lifted or lowered by the excavator.
8) Stop blocks must be used where wheeled plant or vehicles are within 2m of the trench.
9) Excavations will only be entered by a fixed of propritry access.
10) Any entering of excavations will be carried out to the rescue plan below.
11) All trench shoring including the construction of proprietry systems will be used by operatives familiar with Groundforce Systems.
12) Trench boxes and manhole boxes will be constructed to design in a designated and segregated area and the carried to work face by excavator as required.
13) Confined spaces will only be entered by trained operatives with full Gas Detection and emergency escape kit.
14) All safety apparatus will be calibrated, with certificates stored in the Adana files.
15) Where Edge protection cannot be used, any operative working at the side of the excavation must be wearing a harness, connected to a solid fixing capable of holding or weighing a minimum of 250KG
16) This Method statement will be read in conjunction with the Excavator Lifting plan for the excavator carrying out the works.

Live Services: The areas we are working could well have very shallow existing services.

1) Service drawings will be reviewed by Supervisor, Engineer and site team prior to commencing works in each area.
2) The services will be marked by the site engineer but, this is only a guidance and may not be the true location.
3) The CAT scan and generator will be used to further determine the location of the known service.
4) Any street light columns or other utility pits nearby will be opened and investigated to determine other services which may not be on the drawings.
5) All services known or, picked up in further surveying, will be marked on the ground.
6) We will then expose any services within our excavations by hand by operatives wearing fireproof overalls and with insulated tools.
7) Overhead services will be pointed out to all workers involved along with a tool box talk. will
8) Where hardstanding's are above and, we cannot excavate by hand, we will break the surface by mechanical mans but a minimum of 500mm from the location, either side of the line of location.
9) We will remove the hard standings and excavate further down to form two pits either side of the service.
10) Hand dig will then continue sideways from inside the pit, until the service is exposed.
11) Once exposed, the Adana Manager and Morgan Sindall Manager will be invited to inspect.
12) At this point works will be held until the Managers advise further.

Removal of Hard Standings (Some of our excavations will require the removal of existing tarmac and concrete)

1. Permit to excavate must always be in place even when only cutting and removing surfaces.
2. Area must always be segregated with barriers or herras with signage in place.
3. When cutting, full dust suppression must be in place either vaccumn or water.
4. Dust must be reviewed constantly during works.
5. Anybody working directly at the point of works must wear dust masks and goggles.
6. During cutting, breaking and peckering, a mandatory hearing protection zone will be set up.
7. In this zone, ear defenders must be worn by everybody.

Addendum 1 Minimal Traces of Asbestos found to be in the ground.

1. Manager / Engineer to advise on areas where asbestos traces are thought to be present.
2. Traces are within the ground so are not Airbourne however, testing of the air will be carried out during works as a check.
3. Operatives in direct contact with the material will wear paper suits, / wet suits, wellies, and half face masks.
4. At the end of works including prior to breaks and entering the welfare area, the PPE will be cleaned down using the jetwash at the container.
5. A watching brief, with asbestos awareness training will be in attendance with excavation works to look out for any visible amounts of asbestos.
6. If any visible amounts are found, works will be stopped until they can be removed safely by a specialist contractor.
7. No cross contamination of muck into the welfare or office area.
8. Operatives will then remove the PPE and store at the designated area provided at the container.
9. Operatives to take extra care cleaning hands and face prior to eating or leaving site.
10. When returning to the works, the operatives will put their PPE on again.
11. Any damaged PPE or PPE that cannot be cleaned to be replaced before returning to site.
12. Muck being transported will be loaded onto the dumper via the excavator. If the excavated material is dry, we will dampen down with the jetwash.
13. Dumper will only be half filled when transporting hazardous muck to further avoid spillage.
14. Muck storage areas will be fenced off and covered over with visqueen at the end of each shift or during rain.
15. At the end of each shift, all plant will be decontaminated with the jet wash.
16. Work Area will be dampened down and cleaned at the end of each shift or as required.

Sequence of Drainage Works

1. We will excavate and break onto the existing manhole outfall connection for the given run.
2. When breaking manholes, the channel will be protected with timber boarding to prevent rubble entering the lines.
3. Access to manholes will be by a Confined Space Trained operative with full Manhole Escape Kit.
4. Trench box or manhole box will be installed at location.
5. Edge protection and access system will be in place as soon as the box is installed.
6. The existing manhole will either be broken out to allow for new or, a hole formed with breaker / core drill for us to connect our pipe into.

Manholes:

7. Manhole base will be formed with Semi Dry concrete.
8. Channels will be formed as required and then benched.
9. Stubs and rockers will be extended to the edges of the manhole bases so that drain run pipes can be installed to them afterwards.
10. Once the base is cured, the manhole rings and biscuit will be lifted into place with the excavator.

11. The rings will be surrounded with concrete and backfilled in stages to allow the manhole box to be lifted and eventually removed as backfill progresses.

Addendum 2 Manhole EX02 is on an existing culvert and classed as a confined space.

1. Confined space Permit obtained from Morgan Sindall
2. Davit Arm system must be in place with operative connected with Lanyard and Harness
3. Gas monitor in place hung from the edge of the box.
4. Top man in position always watching operative in confined space.
5. If operative requires escape due to gas, he will use the breathing apparatus and then exit the space via the ladder.
6. If the operative collapses for any reason topman will simply use the davit arm to lift and pull him over the edge of the box to safety.

Addendum 3 Ladder to Connection Manhole (Confined Space).

1. Confined space Permit obtained from Morgan Sindall
2. Manhole Escape system must be in place with operative connected with Lanyard and Harness
3. Gas monitor in place hung from the edge of the box.
4. Top man in position always watching operative in confined space.
5. If operative requires escape due to gas, he will use the breathing apparatus and then exit the space via the ladder.
6. If the operative collapses for any reason topman will simply use the winch to lift and pull him to safety
7. A 5m ladder will be lowered into the manhole and tied to a solid point outside of the manhole.
8. Operative will take a grinder and grind existing rungs and remove from the manhole. Full dust PPE suppression and vacuum suppression to be in place.
9. Ater each rung is cut; we will assess for any dust within the manhole
10. Next, the new ladder will be lowered and set in place.
11. Holes will be drilled with the small portable drill and then fixings set in place using resin.
12. Once set, the operative will remove the temporary ladder and make the area safe.

Drain Runs:

12. Pipe laser will be set up by the engineer in the manhole.
13. We will use two trench boxes at a time on drain runs with the previous box being removed and placed in front of the last box as pipes are excavated for, installed and, backfilled.
14. Bedding will be tipped to the bottom of the trench by the excavator and levelled out by the operative.
15. Operative must never stand below the bucket of the excavator.
16. Pipes will be lifted in with accessories as per the lift plan.
17. Pipe will be slinged by a slinger and lowered into the excavator by the excavator.
18. The operative must remain away from the lowered pipe until it is maximum 500mm from bottom at which point, the operative can guide and push the pipe into position.
19. Level of the pipe will be checked to the pipe laser.
20. Trench will be backfilled to level in compacted layers as the boxes are removed in sequence as per design.

Sheet Piles and Tank Excavation:

21. For larger excavations such as tanks, sheet piles will be used for shoring.
22. Sheets and frames will be installed to the approved temporary works design.
23. Line of the sheets will be CAT scanned and any services exposed.
24. Design will then be reviewed if any services clash.
25. The lines of the sheets will be proof excavated to full level.
26. Any obstructions will be broken out and removed.
27. Excavation will be backfilled with granular material and then the trench progressed until the full lines have been proven.
28. We will use an excavator with vibrating pile hammer to rive the piles to full depth.
29. The piles will be lifted by the excavator with lifting attachment.

30. The bottom of the pile will be positioned by slinger banksman, either online or, slotted into previous pile.
31. Exactor will then connect hammer to the pile and drive the pile down.
32. Once piles are installed to 3 sides, edge protection will be installed to the tops.
33. We will then excavate from the Shape outwards keeping a ramp behind.
34. We will excavate to underside of frame as given by the engineer with laser level.
35. Frame will be installed on this level, pumped out and hung from the sheets.
36. Excavation will then continue outwards from the far end.
37. Final side of the piles will then be installed, and final leg of the frame attached.
38. Frame will be pumped out and Morgan Sindall asked to inspect
39. Remaining excavation will be completed from above.
40. If required, a smaller excavator may be lifted in and out of the excavation to trip up or level bedding.
41. **The excavation will be handed to the tank contractor so that they can install.**
42. Once the tank is commissioned and Adana given the go-ahead, we will backfill the tank.
43. A layer of pipe bedding will be placed and levelled over the top of the tank for as far as the excavator can reach from above.
44. Below, operatives will level the pipe bedding by hand.
45. This will be repeated with a layer of stone, at which point (if approved by the engineer, a smaller excavator will be lowered onto the material.
46. The stone will continue to be loaded into the excavation until spread to the depth ready for compaction.
47. Sheets will be removed as backfilling progresses and plant of a suitable weight (Rollers and Excavators not exceeding 5 Tonne, will be used to level and compact the backfill.
48. The 4 corners of the tank will be marked and segregated to prevent it from being crushed by heavy plant or vehicles.

EMERGENCY PROCEDURE

- Operatives working in trenches will be attached by Harness and Lanyard to the davit arm system if, there are no obstructions above his working area such as services and struts.
- If there are obstructions above, then the operative can disconnect as long as a second operative (also wearing a harness) is present to connect him if required.
- If an operative is required to be removed from the trench due to illness or an incident, then the following procedure will be implemented: If the operative can be made safe and secure in the trench until the emergency services can attend then the operative will remain in the trench. Should the operative be required to be removed from the trench immediately then the operative will be lifted with the aid of the davit arm and then moved to a position of safety by a number of operatives at the top of the excavation.
- If this cannot be done with the davit arm, then the harness will be attached to the lifting point on the excavator and under the direction of the top man the excavator will be used to carefully lift the operative from the trench. Should the emergency services be in attendance then the operative will be placed on a stretcher and the excavator used to lift the stretcher from the trench. All lifting equipment will have a 6-month dated test certificate.

Working with Mobile Plant and remaining in the Safety Zones:

- Movement of plant on site, outside of segregated wok zones, to be controlled by trained and competent banksman
- Planned and known Plant movements to be made aware to operatives at daily safe start and any specific pedestrian exclusion zones identified and communicated. Appropriate on site exclusion zones to be implemented around operational machines/excavators at all times and managed and maintained by plant banksman and supervisor
- Plant to be operated by trained and competent operatives
- Loose fitting jackets shall be taken off by the machine operator and hung safely to the rear of the cab but so as not to obscure visibility or interfere with any machine controls BEFORE the machine or plant engine is switched on.

- Keys must never be left in the ignition when not seated in plant.
- Loose fitting clothing must not be worn by machine operators when in the cab. If large coats are worn these should be 'bomber style jackets.' The sleeves and midriff should be elasticated or tight fitting, and the jacket should remain zipped up to prevent potential interference with controls.
- There must be no banksman or other personnel within the slewing or operational area of the machine when the operator is first accessing his cab and starting the machine/positioning himself.
- Machine banksmen and other working personnel must always remain at a safe distance (out of the slew reach of the machine) from operating plant and it must be ensured that their movements are clearly known to the operator.
- If anyone requires entering the working area, they must signal the plant operator beforehand and confirm acknowledgement by the driver. If there is anyone in the working area of the plant the excavator must be stopped, and the dead man's handle engaged.
- If anyone is required to work near to the excavator, a position of safety must be established prior to operations commencing. Positive confirmation that the operative is in this location must be established before any plant movements are undertaken.
- Always turn off the engine and remove the keys from the cab before leaving the machine.
- Plant to have warning beacons and horns in good working order and pre use checks recorded

Plant

1. The excavator will contain a plant file with copies of certificates for the excavator, roller and dumper
2. Each day inspections will be carried out, by the excavator driver for each of this plant and the check sheet filled in and signed. The sheets will be kept in the plant file until the end of the week, and then handed to the Adana Site Manager.
3. A copy of the permit to excavate will be kept in the plant file, in the excavator cab at all times.
4. A fuel bowser will be used to store fuel, a spill kit must be kept on the side of the bowser and a drip tray must be beneath the hose while any refuelling of plant takes place.
5. COSHH Cage will be sat on a plant nappy.
6. Fuel storage to be locked at all times.
7. The COSHH sheet for diesel and petrol will be read and understood before any refuelling takes place.
8. Any smaller plant for mixing, cutting, breaking and drilling will be fully certified with copies kept in the site stores.
9. Only competent operatives will use each item of plant.
10. The HAVs trigger time for any items of plant must be adhered to and, any operative using plant must record their personnel trigger times on the HAVs Record Sheet

LIST OF MATERIALS TO BE USED

6F2, MOT Type 1, Drainage Materials, Ducting Materials, Concrete, COSHH Materials as below

COSHH Register		
Assessment Number	**Product**	**Use**
001	Gas Oil	Fuelling large plant
002	Ready Mix Concrete	Slabs, Surrounds, Foundations
003	Unleaded Petrol	Fuelling small plant
004	2 Stroke	Fuelling small plant
005	Pipe Grease	Lubricating Pipes and ducts
006	Cement / Mortar	Brickwork / Ironworks / General Mixing

LIST OF ANY SUBCONTRACTORS TO BE USED	***Method Statement approved***		***Method Statement attached***	
	YES	**NO**	**YES**	**NO**

EQUIPMENT TO BE USED	YES	NO	EQUIPMENT TO BE USED	YES	NO
LIFTING		✓	**NON MECHANICAL HAND TOOLS**	✓	
MECHANICAL HOIST		✓	**MECHANICAL TOOLS**	✓	
MEWP		✓	**EXCAVATION SHORING**	✓	
LADDER		✓	**TASK LIGHTING**		✓
HOIST		✓	**CAT**	✓	
TEST EQUIPMENT		✓	**VENTILATION / EXTRACTION EQUIPTMENT**		✓
TASK LIGHTING		✓	**LIFTING ACCESSORIES**		✓
SCAFFOLDING		✓	**MECHANICAL PLANT (*State Below)***	✓	
MOBILE SCAFFOLDS		✓	**Excavator, Dumper, Roller**		

RISK ASSESSMENTS					
HAZARD IDENTIFICATION	**YES**	**NO**	**HAZARD IDENTIFICATION**	**YES**	**NO**
SLIPS AND TRIPS	✓		COSHH	✓	
MANUAL HANDLING	✓		**NOISE**	✓	
HAND TOOLS	✓		**WORK AT HEIGHT**	✓	
EXCAVATIONS	✓		**DUST/FUMES**	✓	
MACHINERY/LIFTING EQUIPMENT		✓	**LIGHTING**		✓
FIRE	✓		**3RD PARTY CONTRACTOR**	✓	
FALL OF MATERIAL	✓		**ENVIROMENTAL**	✓	
ELECTRICAL		✓	**HEATING**		✓
WHO MIGHT BE HARMED					
	YES	**NO**		**YES**	**NO**
OWN PERSONNEL	✓		**OFFICE STAFF/VISITORS**	✓	
OTHER CONTRACTORS	✓		**MEMBERS OF THE PUBLIC**		✓

PROPOSED CONTROL MEASURES TO REDUCE RISKS

1) *Risk Assessments*
2) *Toolbox talks*
3) *Site inductions*
4) *Workers to be competent and hold an up to date CSCS card*
5) *Mandatory site PPE to be worn at all times:*

PPE REQUIRED					
	YES	NO		YES	NO
SAFETY HELMET	✓		EYE PROTECTION (LEP)	✓	
PROTECTIVE FOOTWEAR	✓		EYE PROTECTION (IMPACT RESISTANT)	✓	
HIGH VISIBILITY CLOTHING	✓		FACE RESPIRATOR		✓
GLOVES	✓		BODY HARNESS		✓
HEARING PROTECTION	✓		OTHER *(state)*	Asbestos PPE, Suits and half face mask	

PERMITS REQUIRED					
	YES	NO		YES	NO
HOTWORKS	✓		RISER SHAFTS		✓
CRANE / HIAB CHECK LIST		✓	LOAD		✓
EXCAVATION	✓				
CONFINED SPACE ENTRY	✓		OTHER *(state)*		

TRAINING CERTIFICATES REQUIRED (*Adana Matrix Available)*					
	YES	NO		YES	NO
CSCS CARDS	✓		MEWP (IPAF 1a,1b,3a,3b,PAV)		✓
SCAFFOLD		✓	MOBILE TOWER ACCESS (*Pasma)*		✓
TELEHANDLER		✓	VEHICLE MARSHALL	✓	
DUMPER	✓		ABRASIVE WHEELS	✓	
ROLLER	✓		HIAB		✓
EXCAVATOR	✓		STREET WORKS		✓
CONFINED SPACES	✓		SLINGER/SIGNALLER	✓	
CARTRIDGE OPERATED TOOLS	✓		OTHER *(state)*	Asbestos awareness	

EMERGENCY ARRANGEMENTS	
FIRST AID MEASURES REQUIRED	RESCUE/SECURITY MEASURES REQUIRED
NAME OF FIRST AIDER ON SITE: Neil Kirton Morgan Sindall	Call 999 for emergency services contact the local accident and emergency: Manchester Royal Infirmary Tel: 0161 276 1234 Oxford Road Manchester

		Greater Manchester M13 9WL	
RESCUE		**SPILLAGE/ENVIROMENTAL CONTROL REQUIREMENTS**	**(✓)**
BY WHOM	EMEGENCY SERVICES ADANA PERSONNEL PRINCIPAL CONTRACTOR	**PLANT NAPPIES**	✓
		SPILL KITS	✓
HOW	EG: VIA THE SITE MAIN ENTRANCE	**DRIP TRAYS/NAPPIES AT REFUELING AREAS**	✓
		BUNDED FUEL BOWSERS	✓
		BUNDED COSHH CAGES	✓

AMMENDMENT TO CURRENT SYSTEMS						
DATE	**YES/NO**				**AMMENDMENTS**	**M.S REV**
	TRAFFIC ROUTES	**EMERGENCY ARRANGEMENTS**	**EXISITNG SYSTEMS OF WORK**	**OTHER**		
27.11.23.			✓		Asbestos Addendum	Rev A
27.11.23.		✓			Manhole EX06 Confined space	Rev A
07.05.24.		✓	✓		Ladder to Connection Manhole	Rev B

NAME	**SIGNED**	**DATE**
Neil Kirton		**07.05.24.**

INFORMATION CONTROL			
METHOD STATEMENT WRITTEN BY:	Neil Kirton, Site Manager, Adana Construction 		
METHOD STATEMENT CHECKED BY:	Keir Hardie, Contracts Manager 		
METHOD STATEMENT REVIEW DATE		**REVISION No**	

Risk Assessment

Risk Assessment reference:	**014 rev B**	**Activity:**	**Deep Drainage**
Work Area / Location:	Site Wide		
Name of assessor:	Neil Kirton	**Worker Participant:**	Hesham Kahlil
Date Assessed	07.05.2024	**Review Date**	09.11.2024.

Likelihood of Hazardous Event:	1 = Very unlikely	2 = Unlikely	3 = Likely	4 = Very likely	5 = Almost certain
Severity of Consequence:	1 = Minor delay	2 = Minor injury / ill health	3 = Up to 7 day injury / ill health loss	4 = Over 7 day injury / ill health loss	5 = Fatality

Likelihood x Severity = Risk Factor			**Risk Rating**	
1 – 8 Low	9-15 **Medium**	16-25 **High**	**1 – 8** = Low	**Review at least every 2 years**
			9 – 15 = Medium	**Additional controls as reasonably practicable. Review regularly**
			16 – 25 = High	**Activity Not Permitted Additional control measures Required**

HAZARD	**HAZARDOUS EVENT**		**Level of Risk** Before control measures				**RISK CONTROLS** (What action is necessary?)	**Level of Risk** With control measures			
	Who might be harmed?	How might they be harmed? (Most likely outcome NOT worst possible case)	**Likelihood** (1-5)	**Severity of Consequence** (1-5)	**Risk Factor**	**Risk Rating (L, M, H)**		**Likelihood** (1-5)	**Severity of Consequence** (1-5)	**Risk Factor**	**Residual Risk Rating**
Mobile Plant and Vehicles	Operatives, Public	Collision, crushing	3	4	12	M	Plant and Vehicles to be always banked –Daily plant checks and maintenance recorded. Exclusion zones in place around mobile plant Segregation between walkways and plant routes, Only trained and competent operatives to operate mobile pant. Site speed limits adhered to	1	4	4	L
Excavations	Operatives	Falling into excavation. Collapse of excavation	4	4	16	H	Excavations to be fenced off using crowd barriers or Herras Daily excavation inspections. Strictly no entering an excavation unless the sides are stepped with adequate access and egress (steps or tied ladder)	2	4	8	L
Falls on level	Operatives	Tripping over material or uneven ground	4	3	12	M	Housekeeping and leveling off of work area Bandings to be placed directly in skips Operatives to use site walkways**,** Any openings in the slab must be barriered off at all times or covered with ply	2	3	6	L
Dust	Operatives, Public	Breathing dust	4	3	12	M	Dust suppression with any cutting / hoover with circ saws and grinders, Cutting Tent / Zone set up Dampening down of dry stone if required. Face fit tested operatives and FFP3 masks used.	1	1	1	L
Environmental fuel spillage	Operatives, Public	Spillages	3	4	12	M	Drip trays, nappies and spill kits with all plant and bowsers, refueling method statement.	2	1	2	L

Risk Assessment

HAZARD	HAZARDOUS EVENT		Level of Risk Before control measures				RISK CONTROLS (What action is necessary?)	Level of Risk With control measures			
	Who might be harmed?	How might they be harmed? (Most likely outcome NOT worst possible case)	Likelihood (1-5)	Severity of Consequence (1-5)	Risk Factor	Risk Rating (L, M, H)		Likelihood (1-5)	Severity of Consequence (1-5)	Risk Factor	Residual Risk Rating
Enviro Concrete	Public	Concrete contamination	3	3	9	M	Concrete wash out skip used. Visqueen to prevent spillages, Tidiness following pours	2	1	2	L
HAVs	Operatives	Damage to nerves / white finger	3	3	9	M	HAVs awareness and monitoring and control sheets completed daily	1	3	3	L
Manual Handling	Operatives	Strain Injury	4	3	12	M	Excavator to lift all concrete items Manual handing training All operatives fit and well and to report and injuries prior to works	1	2	2	L
COSHH materials	Operatives	Concrete (irritant) Fuel (Fire/ environment)	3	3	9	M	Operatives to read and understand the COSHH for each substance used Wearing of correct PPE COSHH storage cage for fuel	1	2	2	L
Fall of Materials	Operatives	Materials falling into excavation hitting operatives	3	4	12	M	Materials stored away from excavation Operatives to stay out of excavation until excavator has lowered materials below shoulder height	1	2	2	L
Noise	Operatives	Hearing Damage	4	4	16	H	Ear defenders to be worn when working close to pecker on excavator. Ear defenders worn as PPE when using Petrol / mechanical tools Ear defenders worn while driving piles	1	1	1	L
Hot Works	Operatives, Public	Fire / Burns	2	3	6	L	Cutting mesh to be done in secluded area away from flammable materials Hot works permit system	1	1	1	L
Buried Services	Operatives	Cable Strike Electrocution Gas / Explosion	4	5	15	H	Use of VAC Excavation around suspected services Permit to Excavate System in Place, CAT scan area prior to excavation, Trial Holes, method statement for exposing buried services No mechanical excavation within 500mm of known or detected services.	1	5	5	L
Hygiene	E,O	Disease and Contamination	3	4	12	M	Maximum use to be made of all waste disposable facilities. All work areas to be cleared on completion of work daily. All welfare facilities to be kept in a clean and tidy condition. Appropriate PPE to be used at all times (long gloves all skin covered). Personnel hygiene Wash hands at all times before eating, drinking or smoking Hot water to be available at all times Extra care with live drains	1	2	2	L

Risk Assessment

HAZARD	HAZARDOUS EVENT		Level of Risk Before control measures				RISK CONTROLS (What action is necessary?)	Level of Risk With control measures			
	Who might be harmed?	How might they be harmed? (Most likely outcome NOT worst possible case)	Likelihood (1-5)	Severity of Consequence (1-5)	Risk Factor	Risk Rating (L, M, H)		Likelihood (1-5)	Severity of Consequence (1-5)	Risk Factor	Residual Risk Rating
Traces of Asbestos within the ground	Operatives	Cross contamination	3	4	12	M	Operatives in direct contact with the material will wear paper suits, / wet suits, wellies, and half face masks. At the end of works including prior to breaks and entering the welfare area, the PPE will be cleaned down using the jetwash at the container. No cross contamination of muck into the welfare or office area. Operatives will then remove the PPE and store at the designated area provided at the container. Operatives to take extra care cleaning hands and face prior to eating or leaving site. Any damaged PPE or PPE that cannot be cleaned to be replaced before returning to site. Muck being transported will be loaded onto the dumper via the excavator. If the excavated material is dry, we will dampen down with the jetwash. Dumper will only be half filled when transporting hazardous muck to further avoid spillage. Muck storage areas will be fenced off and covered over with visqueen at the end of each shift or during rain. At the end of each shift, all plant will be decontaminated with the jet wash. Work Area will be dampened down and cleaned at the end of each shift or as required.	2	4	8	L
Traces of Asbestos within the ground	Operatives	Breathing in Asbestos	2	5	10	M	Air testing to be carried out by Main Contractor A watching brief, with asbestos awareness training will be in attendance with excavation works to look out for any visible amounts of asbestos. If any visible amounts are found, works will be stopped until they can be removed safely by a specialist contractor Muck being transported will be loaded onto the dumper via the excavator. If the excavated material is dry, we will dampen down with the jetwash Muck storage areas will be fenced off and covered over with visqueen at the end of each shift or during rain. At the end of each shift, all plant will be decontaminated with the jet wash. Work Area will be dampened down and cleaned at the end of each shift or as required.	1	5	5	L
Lifting / Fall of material	Operatives	Crushing	3	5	15	M	Trained Slingers on lifting operations Lifting plan and SWL adhered too Certified Lifting accessories (6 monthly) Weekly lifting accessory inspections	1	5	5	L

Risk Assessment

HAZARD	HAZARDOUS EVENT		Level of Risk Before control measures				RISK CONTROLS (What action is necessary?)	Level of Risk With control measures			
	Who might be harmed?	How might they be harmed? (Most likely outcome NOT worst possible case)	Likelihood (1-5)	Severity of Consequence (1-5)	Risk Factor	Risk Rating (L, M, H)		Likelihood (1-5)	Severity of Consequence (1-5)	Risk Factor	Residual Risk Rating
Wind / Materials	All	Materials Blowing	2	4	8	L	All Sheeting and Voidform to be weighted down with Herras Blocks or paving as laid	1	4	4	L
Joinery Works and Tools	Operatives	Injuries using tools	3	3	9	M	Operatives deemed to be competent and familiar with their tools	2	3	6	L
Collapse Of Excavations and existing Structures	Site Operatives Plant Operators	Fatality Major Injury	5	5	25	H	• Ground conditions to be assessed before works commence • Temporary works drawings to be carried out and approved for any trench box, sheet piling works. • Do not park or travel plant close to edge of excavation, barriers and stop blocks installed at minimum 1m from edge of excavation • Stockpiled materials to be kept away from excavations so it does not create a surcharge. Any live surcharges from adjacent structures or vehicle routes to be taken into account in the design. • Structural engineers to provide loading for any existing structures/vehicle routes so it can be allowed for in design • Excavations to be visually checked at the start of each day and logged weekly. • Pumps to be available to prevent water from destabilizing any temporary works structure or sides of excavations, if heavy rain occurs the area is to be monitored regularly. • Excavations to be installed so batter is at safe angle of repose, nominally 45 degrees, or steps incorporated into the sides, size of step dependent on ground type, where it is loose ground generally choose battered scenario.	1	5	5	L
Access and Egress	Site Operatives Other Site users	Minor Injury	3	4	12	M	• Safe access installed into all excavations • Primary method of access is to install universal excavation steps with handrails, ensuring steps are secured and wont slip/move. • Steps can be formed into the sides of the excavation were universal steps are not practical to install, ensure steps are firm and free of loose materials, use concrete blinding if ground is loose. • Handrail to be installed to the formed steps • Access into cofferdams in excavation stage to be via safe ladder access platforms and a tied ladder, were access is tight a secure ladder can be used with a gated access. • Trench boxes to use safe ladder access platforms incorporated into trench box system. • Lighting to be provided where required to all access and egress areas.	1	4	4	L

Risk Assessment

HAZARD	HAZARDOUS EVENT		Level of Risk Before control measures				RISK CONTROLS (What action is necessary?)	Level of Risk With control measures			
	Who might be harmed?	How might they be harmed? (Most likely outcome NOT worst possible case)	Likelihood (1-5)	Severity of Consequence (1-5)	Risk Factor	Risk Rating (L, M, H)		Likelihood (1-5)	Severity of Consequence (1-5)	Risk Factor	Residual Risk Rating
Confined space entry works	Operatives entering confined spaces	fatality	4	5	20	H	• Fully trained, certified and competent persons to carry out confined space works in accordance with their training. • If works are high risk, then operatives to have additional High Risk confined spaces training. A separate RA to be completed for these works. • Top man to be present at all times with confined space works. • Confined space permit obtained before works commence. • Air monitoring to be undertaken using a calibrated/certified 4 in 1 gas detectors, confined space should be left for 10 minutes to ventilate before starting gas monitoring. • Gas monitors should always be or near the operative working in the confined space. • A calibrate/certified 10-minute escape kit to be used and kept down in the confined space with operative. • Any works entering manholes should be done via a tripod, winch and harness, all apparatus to be calibrated and certified and used in accordance with manufacturers guidance. Area should be barriered of and manhole lid opening should have temporary protection when lid is removed and operatives are not working. • Good access will be in place provided, (see access and egress) • Ensure plant engines are not kept running when close to tops of excavations to prevent Co2 from entering excavations. • When breaking into live sewers, Confined space procedures to be adhered to. • Were possible eliminate the need to enter confined space, look for alternative methods, when building manholes these could have benching installed with only the 1st ring installed on no biscuit to assist with ventilation and more working space. Also consider removing biscuit or rings when requiring to enter manhole after it is built where practicable. • No smoking or use of any other sources of ignition to be used within a confined space. • For any cutting, dust must be monitored as per RAMs with full suppression used	1	5	5	L

Risk Assessment

HAZARD	HAZARDOUS EVENT		Level of Risk Before control measures				RISK CONTROLS (What action is necessary?)	Level of Risk With control measures			
	Who might be harmed?	How might they be harmed? (Most likely outcome NOT worst possible case)	Likelihood (1-5)	Severity of Consequence (1-5)	Risk Factor	Risk Rating (L, M, H)		Likelihood (1-5)	Severity of Consequence (1-5)	Risk Factor	Residual Risk Rating
Adverse Weather	Operatives working in excavations Plant operators	Major injury	3	4	12	M	• Pumps to be set up to prevent water from destabilizing the temporary works structure and sides of the excavations, if heavy rain occurs then monitory to be done regularly to check stability. Also monitor water levels in trench and if pumps cannot cope then operatives are to cease works • If a continued dry period of weather occurs the temporary works and excavations to be monitored for signs of ground dehydration. • If conditions are windy ensure all loose materials are secure	2	4	8	L
Unauthorized entry into excavations Falls from height	Other site users Public	Major injury	2	4	8	M	• Excavations to be barriered of with warning signage erected • Deep excavations to have Heras fencing erected and clipped together or scaffold handrail installed around the work area. • Trench boxes to have handrails installed to the top of the box or the box is to be left 1m above ground level • Sheet piles to be left 1m above ground level where possible or handrail system fitted to the top of the sheet piles.	2	4	8	M
Collapse of persons Rescue plan	Operatives within excavation	Fatality Major injury	2	4	8	M	• When working in trench boxes, sheet piled areas trenches operative in the trench to wear a harness with a fixed length lanyard/inertia reel connected to the top of the shoring system, the lanyard is to be long enough for the operative to work but incase of an emergency or collapse due to asphyxiation an excavator can connect to the operative's lanyard without the need to enter the excavation. If practicable The davit arm system could also be used which connects to the operative fixed lanyard to winch the persons out. If the operative suffers a fall or break and it is safe to enter the excavation, then the top man to call for assistance, IP to be made comfortable and can then be brought out using the machine or davit to the harness or rescue stretcher using the crane excavator. • Ensure clear route for emergency services • Shallower trenches will have steps into excavations for emergency services to access and reach IP. • Operatives working in manholes to have a rescue tripod, winch and harness with top man in attendance at all times.	1	4	4	L

Risk Assessment

HAZARD	HAZARDOUS EVENT		Level of Risk Before control measures				RISK CONTROLS (What action is necessary?)	Level of Risk With control measures			
	Who might be harmed?	How might they be harmed? (Most likely outcome NOT worst possible case)	Likelihood (1-5)	Severity of Consequence (1-5)	Risk Factor	Risk Rating (L, M, H)		Likelihood (1-5)	Severity of Consequence (1-5)	Risk Factor	Residual Risk Rating
Working Inside manholes	Confined space operatives Other site operatives	Major Injury Asphyxiation	3	5	15	M	• Where possible bench manholes and any other associated works when the first ring is only installed with no biscuit which ensures better access, ventilation and working space. • Operatives to never be directly under materials which are being lowered into manhole, if chamber is large enough ensure they are stood to one side, good communication with top man. • Ensure materials that are lowered into manhole are adequately secured. • Always ensure when manhole lids are removed that they are temporarily covered or lid replaced when operatives are not in work area. • Ensure sufficient lighting to carry out the works	1	5	5	L
Leptospirosis Ground contamination	Site operatives	Flu like symptons	3	4	12	M	• Ensure good welfare facilities available with clean hot water. • Barrier creams available • Operatives to ensure good hygiene and wash before eating, drinking, smoking and leaving site • Ensure PPE is provided and there are enough replacements for changing dirty items • Where Practicable disinfectant areas before works commence • If a cut or abrasion occurs, remove PPE and wash immediately, tend to cut/abrasion and replace PPE. • Keep any open sores out of the water or wear Impervious PPE. • If Flu like symptoms occur, seek medical attention, if leptospirosis is contracted then inform your employer.	1	4	4	L

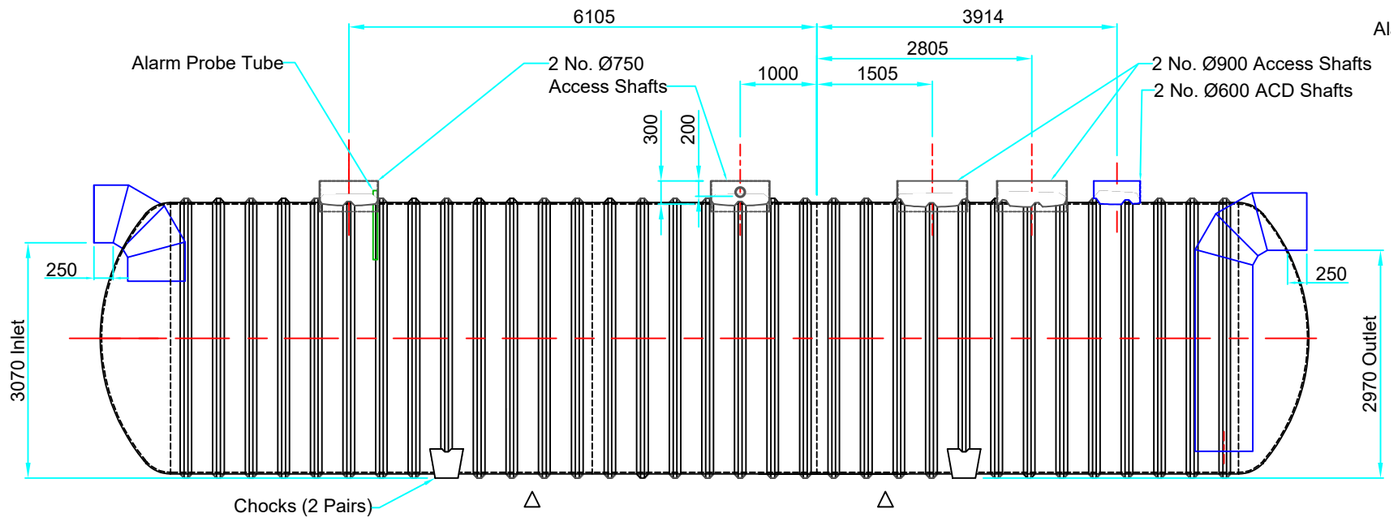
Appendix H

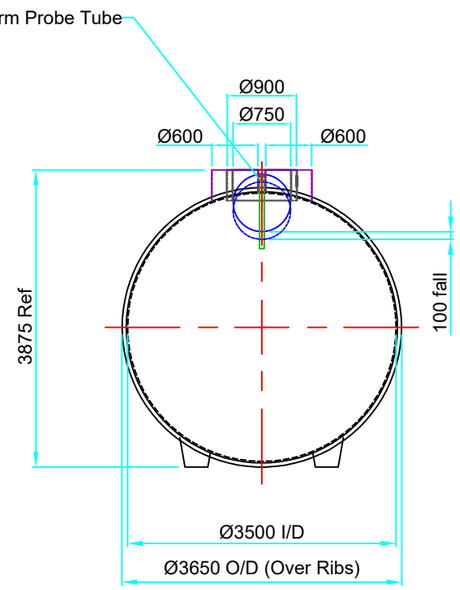
Petrol Interceptor Details

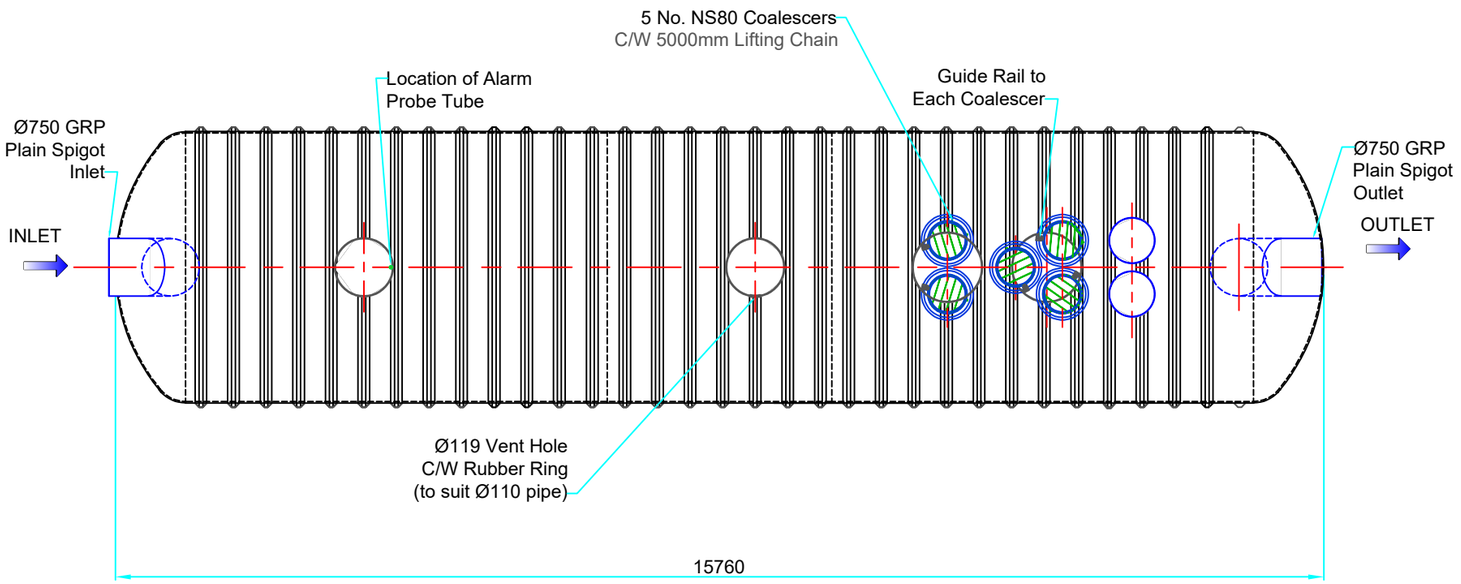
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SERIAL No.	32749	Date		Approved By (Print)		Signed	

CUSTOMER APPROVAL SIGN OFF







ORIENTATION: A
INLET: Ø750 GRP Plain Spigot
OUTLET: Ø750 GRP Plain Spigot

NOTE:-
This Tank is to be supplied with:
2 No. Ø600 Access Shaft Extensions - 2000mm High
2 No. Ø750 Access Shaft Extensions - 2000mm High
1 No. Ø900 Access Shaft Extension - 2000mm High
C/W 2 No. Coalescer Guide Rail Top Brackets,
1No. Chain Hook
1 No. Ø900 Access Shaft Extension - 2000mm High
C/W 3 No. Coalescer Guide Rail Top Brackets,
1No. Chain Hook
5 No. Ø25 Guide Rail Extension 2000mm Long
5 No. Lifting Chains 5000mm Long

Key to Symbols: △ Lifting Point | Hold- down strap rib locations where mechanical anchoring is required | Manufacturing Joint | ◯ BoQ's reference no.

	22.08.24	A	Issued For APPROVAL	RR
Distribution	Date	Rev	Issued only for purpose indicated:	BY:

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SPEL PRODUCTS

DIMENSIONS ARE SUBJECT TO DIMENSIONAL TOLERANCES. If critical, check physically prior to installation

Water table & Burial Depth:
The customer must check tank specification is compatible with ground water table level (in winter) and burial depth. If in doubt refer to SPEL Data Manual Section 7 or contact SPEL Products Sales or Technical Department

Title: SPEL 500 Series Puraceptor Model P400/1CSC Orientation (A)

Contract: Travis Perkins (Manchester)
NWCH Harmmerstone, Gorton,
Manchester, M18 8EQ
Order No.: T00061553

Gross Capacity 144,500 Ltrs
Tank Specification STANDARD
Laminate Specification GP

All sizes in mm
If in doubt ASK!

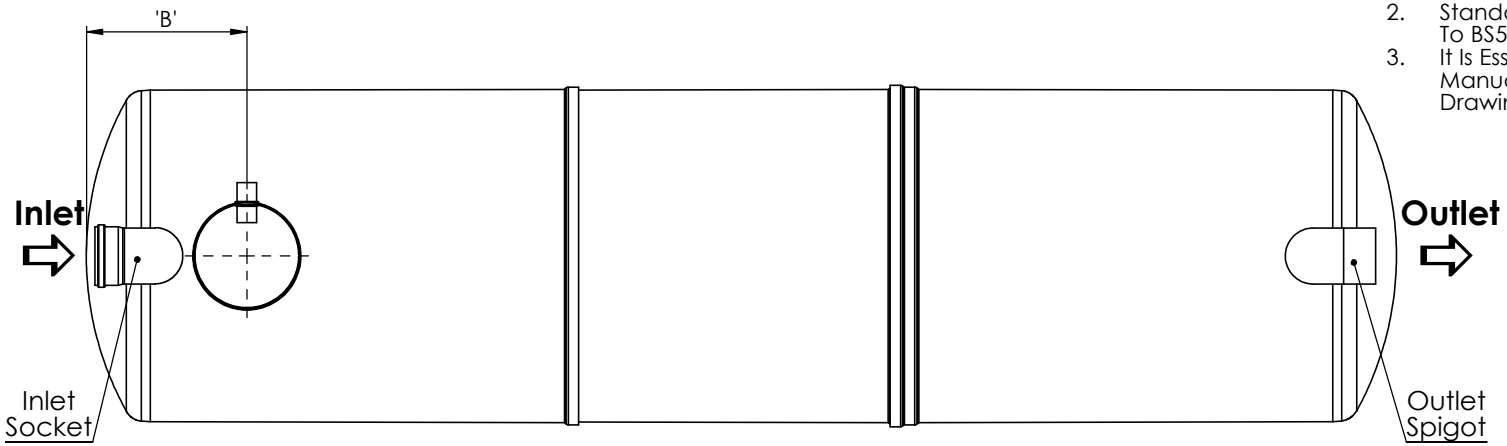
SPEL Life in Water
Lancaster Road, Shrewsbury
Shropshire, SY1 3NQ, England
Telephone: +44 (0)1743 445200
www.spelproducts.co.uk

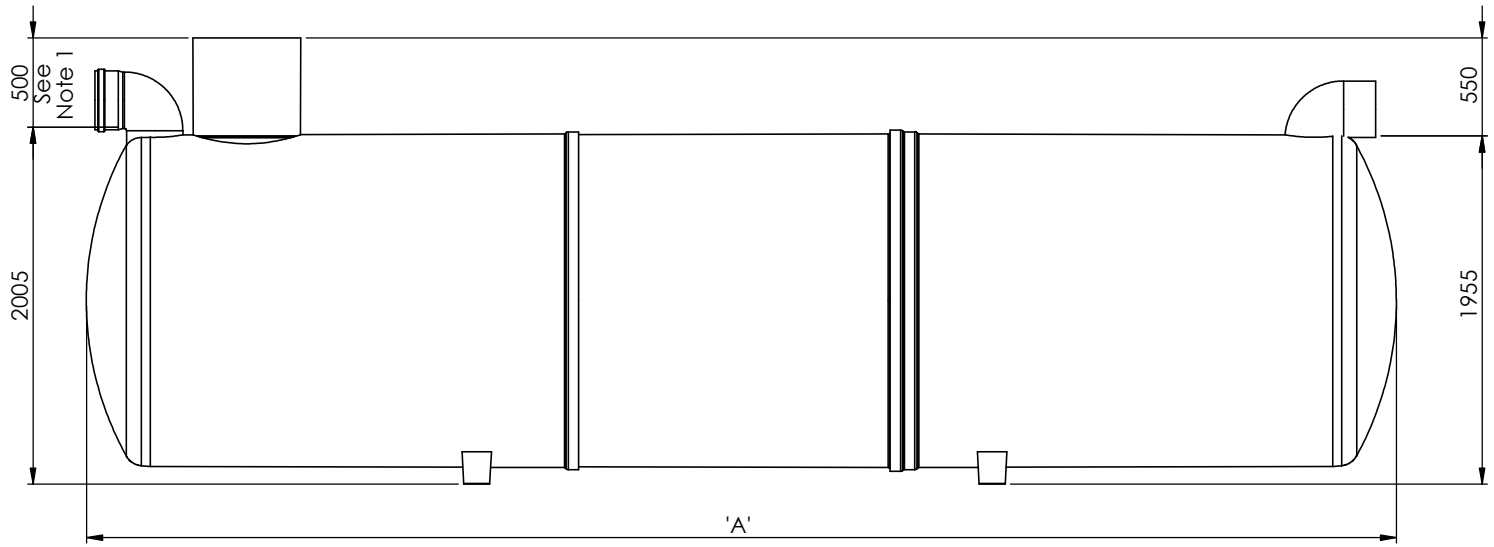
Drawn	RR
Checked	SRB
Date	22.08.24
Scale	1:80 Sheet A3

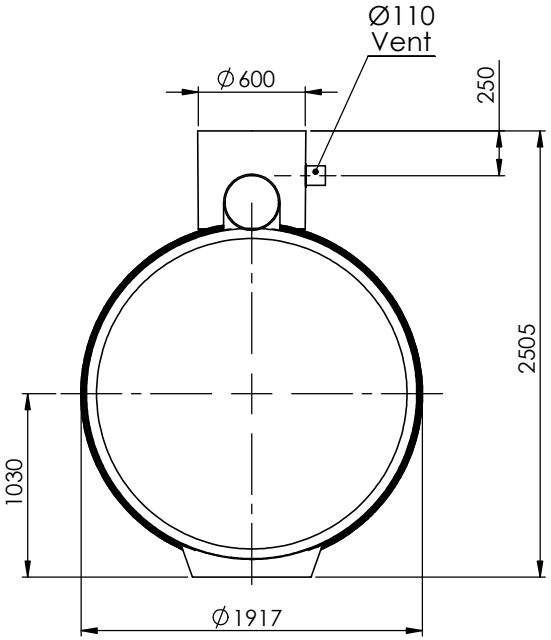
TANK SERIAL No. 32749
INTERNAL ORDER No. 23142/007
Revision A

Notes: -

1. Units Can Be Provided With Extension Shafts In 0.5m Increments.
2. Standard Inlet/ Outlet Pipes Are PVCu Underground Drainage To BS5481, Other Pipe Sizes And Types Available.
3. It Is Essential That This Drawing Is Read In Conjunction With The Manual (Supplied With Unit) Giving Installation Details. This Drawing Should Be Used For Dimensional Information Only.







Unit	Working Capacity	DIM 'A'	DIM 'B'	Inlet/ Outlet STD. Size	Approx Weight (kg)		Fall Across The Unit
					Empty	Full	
W1/ 150	15000	5780	900	300	620	15620	50
W1/ 190	19000	7355		300	750	19750	50

Please Check with Kingspan Environmental For The Latest Issue Of This Drawing

Issue	Date	Drawn by	Approved by	Description
02	30/10/14	L.Steward		CC1179 - Re-drawn In Solidworks/ Change To New Ø1.8 Cases

All Dimensions In mm | Scale: Do Not Scale | Third Angle Projection

R:\Drawing Data\02 - Sales Drawings\DS\DS - 08\DS0855P W1 150 - W1 190 Washdown & Silt Separator (1 Stage)

Material : Various | Tolerance (unless stated) : n/a
Finish : n/a | Thickness : n/a
Weight : n/a | Surface Area : n/a m²
Modelled By :

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Drawing : DS0855P

W1/150 - W1/190 Washdown & Silt Separators. (1-Stage)

Kingspan Environmental

Outlook

RE: RE: Hammerstone Washdown & silt separator

From Pooja Aggarwal <pooja.aggarwal@kingspan.com>
on behalf of
accivilssales <accivilssales@kingspan.com>
Date Thu 2024-12-12 14:00
To Andy Losty <Andy.Losty@curtins.com>

2 attachments (237 KB)
012582 GL0025P-02 Wash Down & Silt Separators.pdf; DS0855P-02 W1 150 - W1 190 Washdown & Silt Separators (1 Stage).pdf;

Hi Andy,

Thanks for the enquiry.

Please see the attached.

Regards
Pooja

From: Andy Losty <Andy.Losty@curtins.com>
Sent: Thursday, December 12, 2024 1:56 PM
To: accivilssales <accivilssales@kingspan.com>
Subject: [EXTERNAL] Re: RE: Hammerstone Washdown & silt separator

[EXTERNAL EMAIL] This email is from an external sender. Do not click links or open attachments unless you recognise the sender and know the content is safe.

Good Morning

We are working on a scheme at a depot in Manchester, and my colleague received the below e-mail.

This scheme has been on hold, and has come back online this year.

I was looking at your website, and could not fins any details regarding the W1/150 Washdown Seperator below.

I would be grateful if you could provide updated details for this. (including tank and installation details).

Thanks in advance for your assistance.

Regards

Andy Losty
Project Civil Engineer

Tel: 0161 236 2394
[Andy.Losty@curtins.com]Andy.Losty@curtins.com

From: accivilssales
Sent:
To: Marta Wolska
Cc: accivilssales
Subject: Re: RE: Hammerstone Washdown & silt separator

Hi Marta,

Thanks for your inquiry.

We will advise our W1-150 **(46-60 Cars or 31-45 Lorries)**on the basis of 55 vehicles per day washing.

Please see the below table and see if this is what you are looking for.

Model Ref	Total Capacity (Ltrs)	Max.rec. Silt (Ltrs)	Max. Flow Rate (L/S)	Length (MM)	Diameter (MM)	Access Shaft Di-ameter (MM)	Base Inlet Invert (MM)	Base To Outlet Invert (MM)	Stan-dard Fall Across (MM)	Min Inlet Invert (MM)	Standar Pipewor Diamete (MM)
W1/010	1000	500	3	1123	1225	460	1150	1100	50	500	160
W1/020	2000	1000	5	2074	1225	460	1150	1100	50	500	160
W1/030	3000	1500	8	2952	1225	460	1150	1100	50	500	160
W1/040	4000	2000	11	3898	1225	460	1150	1100	50	500	160
W1/060	6000	3000	16	4530	1440	600	1360	1310	50	500	160
W1/080	8000	4000	22	3200	2020	600	2005	1955	50	500	160
W1/100	10000	5000	27	3915	2020	600	2005	1955	50	500	160
W1/120	12000	6000	33	4640	2020	600	2005	1955	50	500	160
W1/150	15000	7500	41	5435	2075	600	1940	1890	50	500	160
W1/190	19000	9500	52	6865	2075	600	1940	1890	50	500	160

Regards
Pooja

Pooja Aggarwal

Commercial Support & Sales – Surface Water Management

Kingspan

Kingspan Water & Energy Ltd.
College Road North, Aston Clinton | Aylesbury | Buckinghamshire | HP22 5EW
T: +44 1296 633 128
E: pooja.aggarwal@kingspan.com
www.kingspanwaterandenergy.com

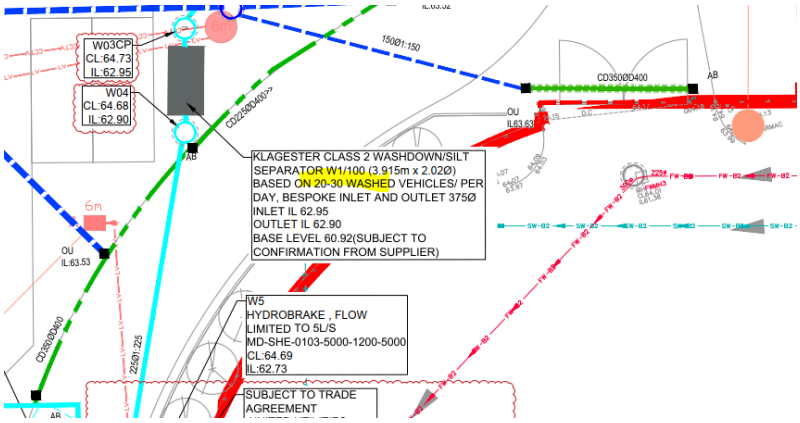


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From: Marta Wolska <marta.wolska@curtins.com>
Sent: 22 March 2023 08:42
To: accivilssales <accivilssales@kingspan.com>
Cc: Andy Losty <Andy.Losty@curtins.com>
Subject: Hammerstone Washdown & silt separator

Dear Sir/ Madam
Currently for our site we have proposed W1/100.
We have just received confirmation form the Client that 55 vehicle will be washed per day. 3.25l/s and maximum discharge volume per day 29.4m3
Could you please advise which washdown separator will be the most suitable?



Marta Wolska Principal Civil Engineer
Curtins
T. 0161 236 2394 | marta.wolska@curtins.com

From: Williams, Philip (MS) <Phil.Williams@morgansindall.com>
Sent: 21 March 2023 16:29
To: Joel Anderson <janderson@wave-utilities.co.uk>; matthew.lowe@uuplc.co.uk; Lindsay Oldham <lindsay.oldham@manchester.gov.uk>
Cc: Harrison, Mark (MS) <mark.harrison@morgansindall.com>; Ryan, James (MS) <James.Ryan@morgansindall.com>; Anna Lucas <Anna.Lucas@manchester.gov.uk>; Webb, Dave (MS) <Dave.Webb@morgansindall.com>; Michael Jones <michael.jones@manchester.gov.uk>; Emma Rubezevicius <emma.rubezevicius@manchester.gov.uk>; Marta Wolska <marta.wolska@curtins.com>; Walter Dooley <walter.dooley@manchester.gov.uk>
Subject: RE: Trade Effluent Licence - Hammerstone

Hi Joel,

After getting the Wash Down requirements from Emma and the Flow rates from the proposed equipment I have been able to Calculate the following (the workings as per the attached spread sheet) on top of the information provided in the history of this email.

Maximum volume to be discharged (m^3 per 24 hours) = 29.4m3
Maximum rate of discharge (litres per second) = 3.25 ltrs/sec

Please come back to me if you need any further calculation, but can we now submit this application?

Best regards

Phil Williams BSc (Civil Engineering)
Senior Design Manager
Construction
D 0161 874 1000 **M** 07734478674 phil.williams@morgansindall.com

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Salford Quays, Manchester, M50 3YW
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morgansindall.com

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From: Williams, Philip (MS)
Sent: 08 February 2023 14:42
To: Joel Anderson <janderson@wave-utilities.co.uk>; matthew.lowe@uuplc.co.uk; Lindsay Oldham <lindsay.oldham@manchester.gov.uk>
Cc: Harrison, Mark (MS) <mark.harrison@morgansindall.com>; Ryan, James (MS) <James.Ryan@morgansindall.com>; Anna Lucas <Anna.Lucas@manchester.gov.uk>; Webb, Dave (MS) <Dave.Webb@morgansindall.com>; Michael Jones <michael.jones@manchester.gov.uk>; Emma Rubezevicius <emma.rubezevicius@manchester.gov.uk>; Marta Wolska <marta.wolska@curtins.com>; Walter Dooley <walter.dooley@manchester.gov.uk>
Subject: RE: Trade Effluent Licence - Hammerstone

Hi Joel,

Sorry I cannot provide any more information than my previous email.

Please speak to Lindsay or the end users for the rest of the information together with the Wet signature.

I can only provide the information relating to the Construction of the Wash Down Area, not how it will be used.

We are however desperate to get this issued as we need the Permit to start the construction.

Best regards

Phil Williams BSc (Civil Engineering)
Senior Design Manager

Construction
D 0161 874 1000 **M** 07734478674 phil.williams@morgansindall.com

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From: Joel Anderson <janderson@wave-utilities.co.uk>
Sent: 08 February 2023 14:31
To: Williams, Philip (MS) <Phil.Williams@morgansindall.com>; matthew.lowe@uuplc.co.uk; Lindsay Oldham <lindsay.oldham@manchester.gov.uk>
Cc: Harrison, Mark (MS) <mark.harrison@morgansindall.com>; Ryan, James (MS) <James.Ryan@morgansindall.com>; Anna Lucas <Anna.Lucas@manchester.gov.uk>; Webb, Dave (MS) <Dave.Webb@morgansindall.com>; Michael Jones <michael.jones@manchester.gov.uk>; Emma Rubezevicius <emma.rubezevicius@manchester.gov.uk>; Marta Wolska <marta.wolska@curtins.com>; Walter Dooley <walter.dooley@manchester.gov.uk>
Subject: RE: Trade Effluent Licence - Hammerstone

Hi Philip,

Many thanks for coming back again. I do however need all the info that you can provide completing on the G02 form along with a wet signature from an authorised contact (Section 12). I can then get It submitted to UU along with the supporting plan.

Apologies if this seems pedantic it's just if I don't have a hard signed copy from the customer that I can pass on in support it will just delay the process anyway when I am asked for one as it is a requirement for these applications.

Kind Regards

Joel

From: Williams, Philip (MS) <Phil.Williams@morgansindall.com>
Sent: 08 February 2023 10:26
To: Joel Anderson <janderson@wave-utilities.co.uk>; matthew.lowe@uuplc.co.uk; Lindsay Oldham <lindsay.oldham@manchester.gov.uk>
Cc: Harrison, Mark (MS) <mark.harrison@morgansindall.com>; Ryan, James (MS) <James.Ryan@morgansindall.com>; Anna Lucas <Anna.Lucas@manchester.gov.uk>; Webb, Dave (MS) <Dave.Webb@morgansindall.com>; Michael Jones <michael.jones@manchester.gov.uk>; Emma Rubezevicius <emma.rubezevicius@manchester.gov.uk>; Marta Wolska <marta.wolska@curtins.com>; Walter Dooley <walter.dooley@manchester.gov.uk>
Subject: RE: Trade Effluent Licence - Hammerstone

Hi Joel,

Further to my email below, find below the information we can provide, but also some of the items we can't provide.

5.5 Volume of Trade Effluent
We cannot provide the volumes for Trade Effluent as this is down to the End User and the following needs to be established

- Number of vehicles washed in the same time
- Number of vehicles washed per day
- Water consumption to wash one vehicle

6.2 Drainage Plan
As previously provided, I have attached the Current Drainage Plan with the Washdown Drainage coloured Cyan.
There are a couple of issues

- The other drainage systems on this drawing may be getting changed or omitted as we resolve budget constraints
- The drainage from the Wash Down Area collects the On-site Surface Water from the same area

Please let me know if or/and how you want the drawing revised

6.3 Connection to sewer location
Hammerstone Road

6.4 Is this a proposed or an existing connection to the Sewerage network? (tick as appropriate)

☐ Proposed ☐ Existing

Into which Sewerage network is the discharge intended to be made? (tick as appropriate)

☐ Foul sewer ☐ Surface water sewer

☐ Combined sewer ☐ Direct to waste water treatment works

6.5 Is there any rainfall discharged through the Trade Effluent sample point? (tick as appropriate)

☐ Yes ☐ No

6.6 Surface area drainage

Contaminated surface area draining through Trade Effluent sample point

0 ..... m^2

Non-contaminated surface area draining through Trade Effluent sample point

1204 ..... m^2

7.1 How is water supplied to the premises? (tick all that apply)

Mains supply or supplies ☐ Private borehole

Private third party network ☐ Other, eg rain water harvesting

Please keep me updated with the progress of the submission, as we need to submit a Section 106 to start these works

Best regards

Phil Williams BSc (Civil Engineering)
Senior Design Manager
Construction
D 0161 874 1000 **M** 07734478674 phil.williams@morgansindall.com

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From: Williams, Philip (MS)
Sent: 23 January 2023 12:28
To: Joel Anderson <janderson@wave-utilities.co.uk>; matthew.lowe@uuplc.co.uk; Lindsay Oldham <lindsay.oldham@manchester.gov.uk>
Cc: Harrison, Mark (MS) <mark.harrison@morgansindall.com>; Ryan, James (MS) <James.Ryan@morgansindall.com>; Anna Lucas <Anna.Lucas@manchester.gov.uk>; Webb, Dave (MS) <Dave.Webb@morgansindall.com>; Michael Jones <michael.jones@manchester.gov.uk>; Emma Rubezevicius <emma.rubezevicius@manchester.gov.uk>; Marta Wolska <marta.wolska@curtins.com>; Walter Dooley <walter.dooley@manchester.gov.uk>
Subject: RE: Trade Effluent Licence - Hammerstone

Thanks Joel,

I will discuss with Marta, our Civil Engineer, but on 1st review we can provide responses for the following –

5.5 Volume of Trade Effluent

Maximum volume to be discharged (m^3 per 24 hours)	.....
Maximum rate of discharge (litres per second)	.....

Maximum volume to be discharged (m^3 per 24 hours)	.....
Maximum rate of discharge (litres per second)	.....

Proposed starting date for discharge (or approximate starting date for an existing discharge)

6.1 Sample Point Location
The sample point must be such that it will provide a sample of the Trade Effluent discharged to the public sewer without domestic sewage contamination, and provide safe and reasonable access at all times
Provide a description of the location of the sample point (and X-Y coordinates if known):

Location .....

6.2 Drainage Plan

Failure to supply a suitable draining plan will result in a rejection of your application.

Enclose a drainage drawing for the premises with the following marked on the plan:

- **The location of the sample point**
- **Point of entry into the Sewerage system, appropriately coloured as follows**

Red – Sewer network **Blue – On-site surface water**

Green – Trade Effluent **Brown – Domestic Waste**

6.3 Connection to sewer location

Provide the name of the street (or other identifying description) where the connection to the sewer is located

.....

6.4 Is this a proposed or an existing connection to the Sewerage network? (tick as appropriate)

☐ Proposed ☐ Existing

Into which Sewerage network is the discharge intended to be made? (tick as appropriate)

☐ Foul sewer ☐ Surface water sewer

☐ Combined sewer ☐ Direct to waste water treatment works

6.5 Is there any rainfall discharged through the Trade Effluent sample point? (tick as appropriate)

☐ Yes ☐ No

6.6 Surface area drainage

Contaminated surface area draining through Trade Effluent sample point

..... m^2

Non-contaminated surface area draining through Trade Effluent sample point

..... m^2

7.1 How is water supplied to the premises? (tick all that apply)

Mains supply or supplies ☐ Private borehole

Private third party network ☐ Other, eg rain water harvesting

Other abstraction

After discussion, I will come back to you with a formal response.

Cheers

Best regards

Phil Williams BSc (Civil Engineering)
Senior Design Manager
Construction
D 0161 874 1000 **M** 07734478674 phil.williams@morgansindall.com

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Please consider the environment before printing this email

From: Joel Anderson <janderson@wave-utilities.co.uk>
Sent: 23 January 2023 11:50
To: Williams, Philip (MS) <Phil.Williams@morgansindall.com>; matthew.lowe@uuplc.co.uk; Lindsay Oldham <lindsay.oldham@manchester.gov.uk>
Cc: Harrison, Mark (MS) <mark.harrison@morgansindall.com>; Ryan, James (MS) <James.Ryan@morgansindall.com>; Anna Lucas <Anna.Lucas@manchester.gov.uk>; Webb, Dave (MS) <Dave.Webb@morgansindall.com>; Michael Jones <michael.jones@manchester.gov.uk>; Emma Rubezevicius <emma.rubezevicius@manchester.gov.uk>; Marta Wolska <marta.wolska@curtins.com>; Walter Dooley <walter.dooley@manchester.gov.uk>
Subject: RE: Trade Effluent Licence - Hammerstone

Hi Phil.

Many thanks for the update and great to see we now have an understanding of how to progress.

I attach a copy of the G02 TE discharge application, if this can be completed with as much detail as possible I will then formally submit to UU for review and approval via the bi-lateral process. I appreciate some of the requested information may have been provided in separate exchanges but this needs to now be formally completed and returned to us with the relevant supporting detail.

I look forward to receipt back and getting this in for us.

Kind Regards

Joel

From: Williams, Philip (MS) <Phil.Williams@morgansindall.com>
Sent: 23 January 2023 10:05
To: matthew.lowe@uuplc.co.uk; Joel Anderson <janderson@wave-utilities.co.uk>; Lindsay Oldham <lindsay.oldham@manchester.gov.uk>
Cc: Harrison, Mark (MS) <mark.harrison@morgansindall.com>; Ryan, James (MS) <James.Ryan@morgansindall.com>; Anna Lucas <Anna.Lucas@manchester.gov.uk>; Webb, Dave (MS) <Dave.Webb@morgansindall.com>; Michael Jones <michael.jones@manchester.gov.uk>; Emma Rubezevicius <emma.rubezevicius@manchester.gov.uk>; Marta Wolska <marta.wolska@curtins.com>; Walter Dooley <walter.dooley@manchester.gov.uk>
Subject: Trade Effluent Licence - Hammerstone

Dear all,

Matthew Lowe from UU called me last week. (Thanks for the call Matthew) and we discussed the proposed Washdown and the flow restriction of 5litre/sec we are installing as part of our contract.

On discussion, Mathew informed me that “Wave” will need to make a “G02” application. As I understand it – a new application, as the proposed Washdown has an outfall to a different public drain and the flow rates differ from the current Permit.

For everyone’s information, I have attached our current proposed layout and drainage design for this area which shows-

- Grit Traps - A Washdown/ Silt Separator based on 20-30 vehicles per
- A Hydro Brake – To limit the flow to 5 ltrs/sec, which has the associated chambers/manholes and attenuation tanks

Please bear in mind that we cannot start works in this area until we have this Permit, as it is required for our Section 106 application (An agreement to allow discharge to a Public Sewer), so your earliest action will be appreciated.

If anyone requires any further construction information or design calculations, please let me know by return.

Cheers

Best regards

Phil Williams BSc (Civil Engineering)
Senior Design Manager
Construction
D 0161 874 1000 **M** 07734478674 phil.williams@morgansindall.com

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++

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Project Civil Engineer

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curtins.com

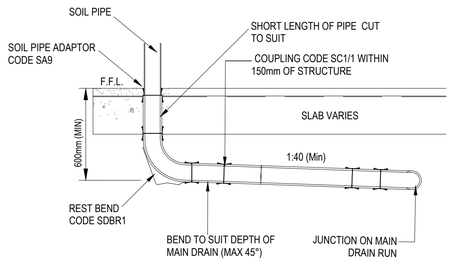
Curtins Building a better future

Appendix I

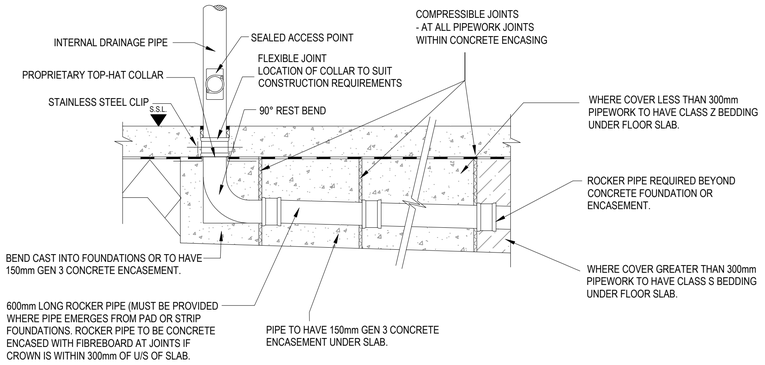
Linear Drainage Channel Details

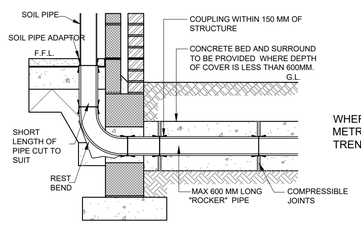
Linear Drainage Channel DOP

In-situ Channel Details



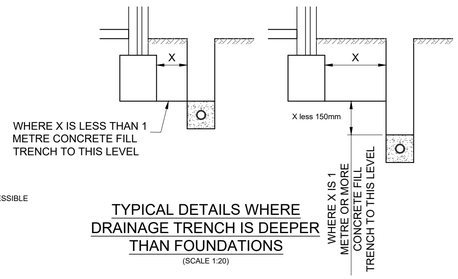
TYPICAL SVP CONNECTION TO MAIN RUN





SOIL & VENT PIPE / STUB STACK / W.C. CONNECTION DETAIL

(SCALE 1:20)

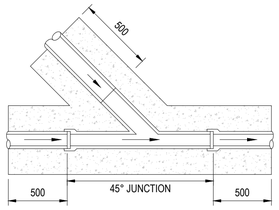


TYPICAL DETAILS WHERE DRAINAGE TRENCH IS DEEPER THAN FOUNDATIONS

(SCALE 1:20)

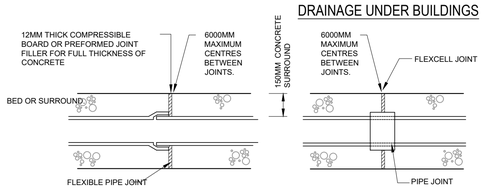
GENERAL NOTES:

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTS AND ENGINEERS DRAWINGS AND SPECIFICATIONS.
2. DO NOT SCALE THIS DRAWING. ANY AMBIGUITIES, OMISSIONS AND ERRORS ON DRAWINGS SHALL BE BROUGHT TO THE ENGINEERS ATTENTION IMMEDIATELY. ALL DIMENSIONS MUST BE CHECKED / VERIFIED ON SITE.
3. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS NOTED OTHERWISE.
4. FOR GENERAL NOTES REFER TO DRAWING.



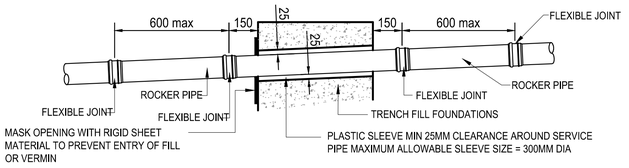
TYPICAL SADDLE CONNECTION

DRAINAGE UNDER BUILDINGS



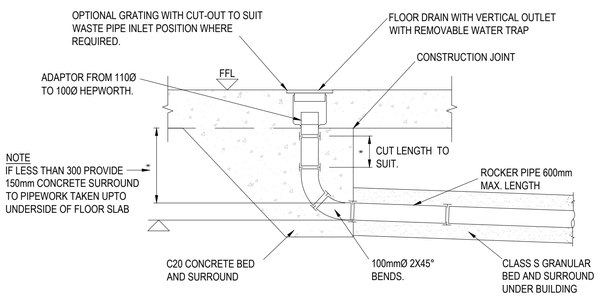
EXPANSION JOINT FOR CONCRETE BED AND SURROUND

(SCALE 1:20)

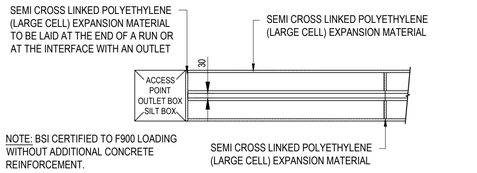


PIPES PASSING THROUGH GROUND BEAM

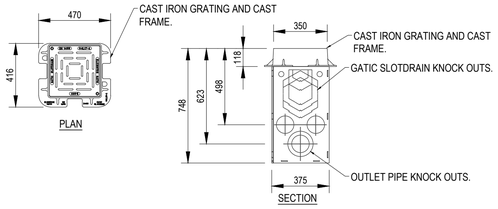
SCALE 1:20



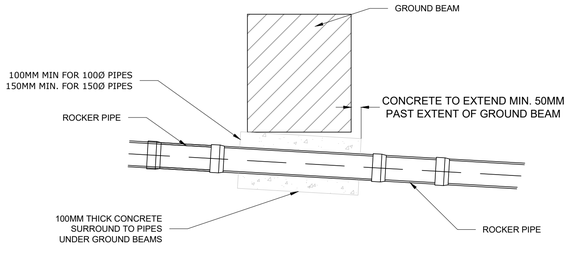
INTERNAL FLOOR DRAIN



GATIC PLAN DETAIL

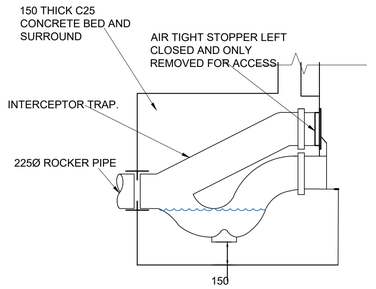


GATIC SLOTDRAIN 350mm OUTLET UNIT SECTION AND PLAN DETAILS NTS

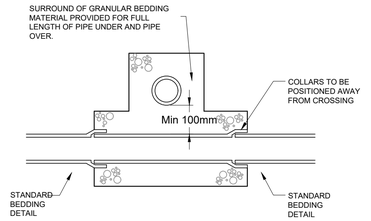


TYPICAL PIPE DETAIL UNDER GROUND BEAMS

(SCALE 1:20)



INTERCEPTOR TRAP

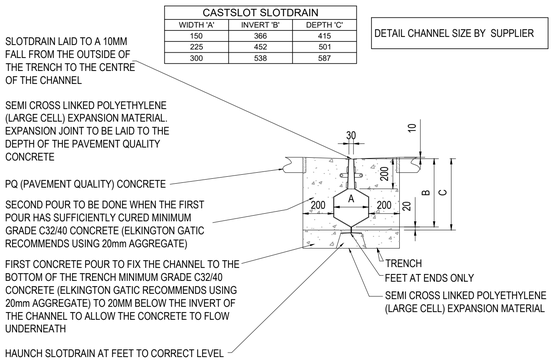


PIPE CROSSINGS DETAIL

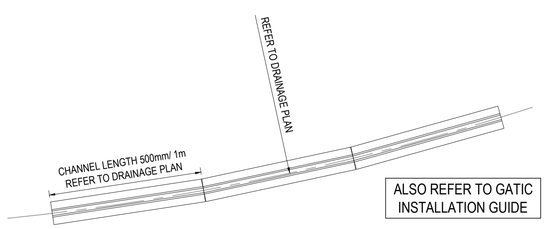
(SCALE 1:20)

CASTSLOT SLOTDRAIN		
WIDTH 'A'	INVERT 'B'	DEPTH 'C'
150	366	415
225	452	501
300	538	587

DETAIL CHANNEL SIZE BY SUPPLIER



GATIC CASTLOST TREADSAFE CONCRETE INSTALLATION



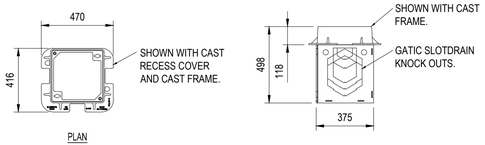
ALSO REFER TO GATIC INSTALLATION GUIDE

GATIC CASTSLOT TREADSAFE INSTALLATION TO RADII

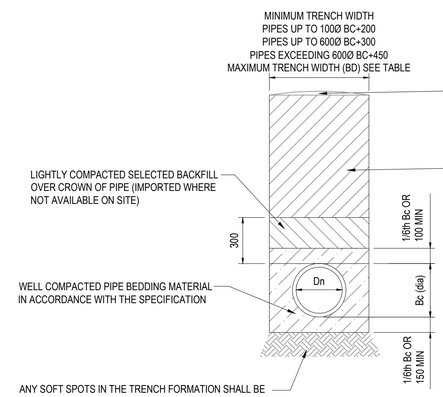
Gatic CastSlot, UltraSlot & PaveSlot Minimum External Radius											
Channel Width	Channel Length	1mm Gap	2mm Gap	3mm Gap	4mm Gap	5mm Gap	6mm Gap	7mm Gap	8mm Gap	9mm Gap	10mm Gap
100	3m	320.9m	160.5m	107.0m	80.3m	64.2m	53.5m	45.9m	40.2m	35.7m	32.1m
100	1m	107.0m	53.6m	35.7m	26.8m	21.5m	17.9m	15.4m	13.5m	12.0m	10.8m
100	500mm	53.6m	26.8m	17.9m	13.5m	10.8m	9.0m	7.7m	6.8m	6.0m	5.4m
150	3m	471.6m	235.9m	157.3m	118.0m	94.4m	78.7m	67.5m	59.1m	52.5m	47.3m
150	1m	157.3m	78.7m	52.5m	39.4m	31.6m	26.3m	22.6m	19.8m	17.6m	15.9m
150	500mm	78.7m	39.4m	26.3m	19.8m	15.9m	13.3m	11.4m	10.0m	8.9m	8.0m

Gatic CastSlot, UltraSlot & PaveSlot Minimum Internal Radius											
Channel Width	Channel Length	1mm Gap	2mm Gap	3mm Gap	4mm Gap	5mm Gap	6mm Gap	7mm Gap	8mm Gap	9mm Gap	10mm Gap
100	3m	320.8m	160.4m	106.9m	80.2m	64.1m	53.4m	45.8m	40.0m	35.6m	32.0m
100	1m	106.9m	53.5m	35.6m	26.7m	21.4m	17.8m	15.3m	13.3m	11.9m	10.7m
100	500mm	53.5m	26.7m	17.8m	13.4m	10.7m	8.9m	7.6m	6.7m	5.9m	5.3m
150	3m	471.5m	235.7m	157.1m	117.8m	94.3m	78.5m	67.3m	58.9m	52.3m	47.1m
150	1m	157.2m	78.6m	52.4m	39.3m	31.4m	26.2m	22.4m	19.6m	17.4m	15.7m
150	500mm	78.6m	39.3m	26.2m	19.6m	15.7m	13.1m	11.2m	9.8m	8.7m	7.9m

TABLE EXTRACTS FROM GATIC INSTALLATION GUIDE



350 ACCESS BOX SECTION AND PLAN DETAILS NTS

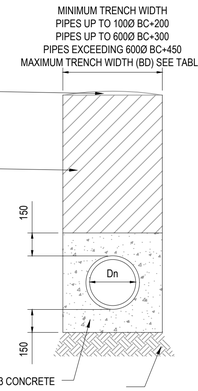


CLASS S - 360° GRANULAR SURROUND PIPE BEDDING DETAIL

THE FLEXIBLE JOINTS IN THE PIPES SHALL BE MAINTAINED AT THE END OF EACH PIPE WITH COMPRESSIBLE SHEET CUT ACCURATELY TO FIT THE PIPE PROFILE TO BREAK THE CONCRETE SURROUND

Dn	Bd
150	0.6
225	0.7
300	0.85
375	1.05
450	1.15
525	1.25
600	1.35
675	1.45
750	1.50

MAXIMUM TRENCH WIDTH



CLASS Z - CONCRETE BED AND SURROUND PIPE BEDDING DETAIL

COVER < 900mm IN VEHICULAR LOADING AND OPEN FIELD.
COVER <600mm ELSEWHERE EXCEPT UNDER BUILDINGS.

Rev:	Description:	Date:	By:	Chkd:
C02	STAGE 5 ISSUE	24.09.24	JC	ATL
P05	UPDATED IN LINE WITH COMMENTS	13.02.24	ATL	MW
P04	UPDATED FOR NEW TENDER	02.02.24	ATL	MW
C01	CONSTRUCTION ISSUE	23/09/22	ATL	MW
P03	STAGE 4 ISSUE	09/04/21	MW	MW
P02	STAGE 3 ISSUE	04/11/20	MW	MW
P01	STAGE 3 ISSUE	29/01/19	MW	CG

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Civils & Structures • Transport Planning • Environmental • Infrastructure • Geotechnical • Conservation & Heritage • Principal Designer
Birmingham • Bristol • Cambridge • Cardiff • Douglas • Dublin • Edinburgh • Glasgow • Kendal • Leeds • Liverpool • London • Manchester • Nottingham

Status: STAGE 5

Project: HAMMERSTONE ROAD DEPOT

Drg Title: DRAINAGE DETAILS SHEET 2

Project No:	Size:	Date:	Drawn By:	Designed By:	Checked By:
068065	A1	29/01/19	MW	MW	CG
	Scale: 1:20				

Project Code: Originator: Zone: Level: Type: Discipline: Category / Number: Rev:

HRD - CUR - XX - ZZ - DR - C - 92521 -C02

\\ma-fs-1\Projects\068001 - 068000\068065 - Hammerstone Road Depot\CAD\5 4 Production\4B Models & Drawings_Civil-C\C-AD1(92)

Declaration of Performance
Gatic CastSlot Treadsafe

CE

QA Document Number:	ED0025 REV. 1
Manufacturer's Address:	Gatic Poulton Close, Dover, Kent, CT17 0UF Telephone: +44 (0) 1304 203545 Fax: +44 (0) 1304 215001 Web: www.gatic.com
Intended Use:	Gatic CastSlot Treadsafe - For the catchment and drainage of surface water in areas for pedestrian and/or vehicular traffic.
Product Range:	CAT00001, CAT00002, CAT00003, CAT00004, CAT00005, CAT00006, CAT00007, CAT00008 CAT00009, CAT00010, CAT00011, CAT00012, CAT00013, CAT00014, CAT00015, CAT00016 CAT00017, CAT00018, CAT00019, CAT00020, CAT00021, CAT00022, CAT00023, CAT00024
System of Attestation of performance:	System 3
Notified Body:	NB 0086 - BSi Product Services
Type Test Report No.:	285/4618749
1. Water Tightness - Jointing of Drainage Channels:	No Leakage
2. Load Bearing Capacity - Deflection Under Load:	
Maximum Load	F900*
Permanent Set	NPD
3. Durablity:	NPD
Material:	1.5/2.5/3mm Thick mild steel sheet grade 'DX51D' (Pre-Galvanised) Continuously hot dipped galvanised 'Z275' minimised spangled, passivated to 'BS EN 10346 : 2009' [DX51D+Z275-M-A-C] (Fe P02 G Z275 MA C).
Applied Standard:	EN 1433:2002 + A1 2005

This declaration herewith confirms that the described manufactured items comply with the relevant parts of BS EN 1433:2002 + A1 2005 for linear drainage channels in areas for pedestrian and/or vehicular traffic for the catchment and drainage of surface water, *when installed in compliance with the manufacturers installation instructions.

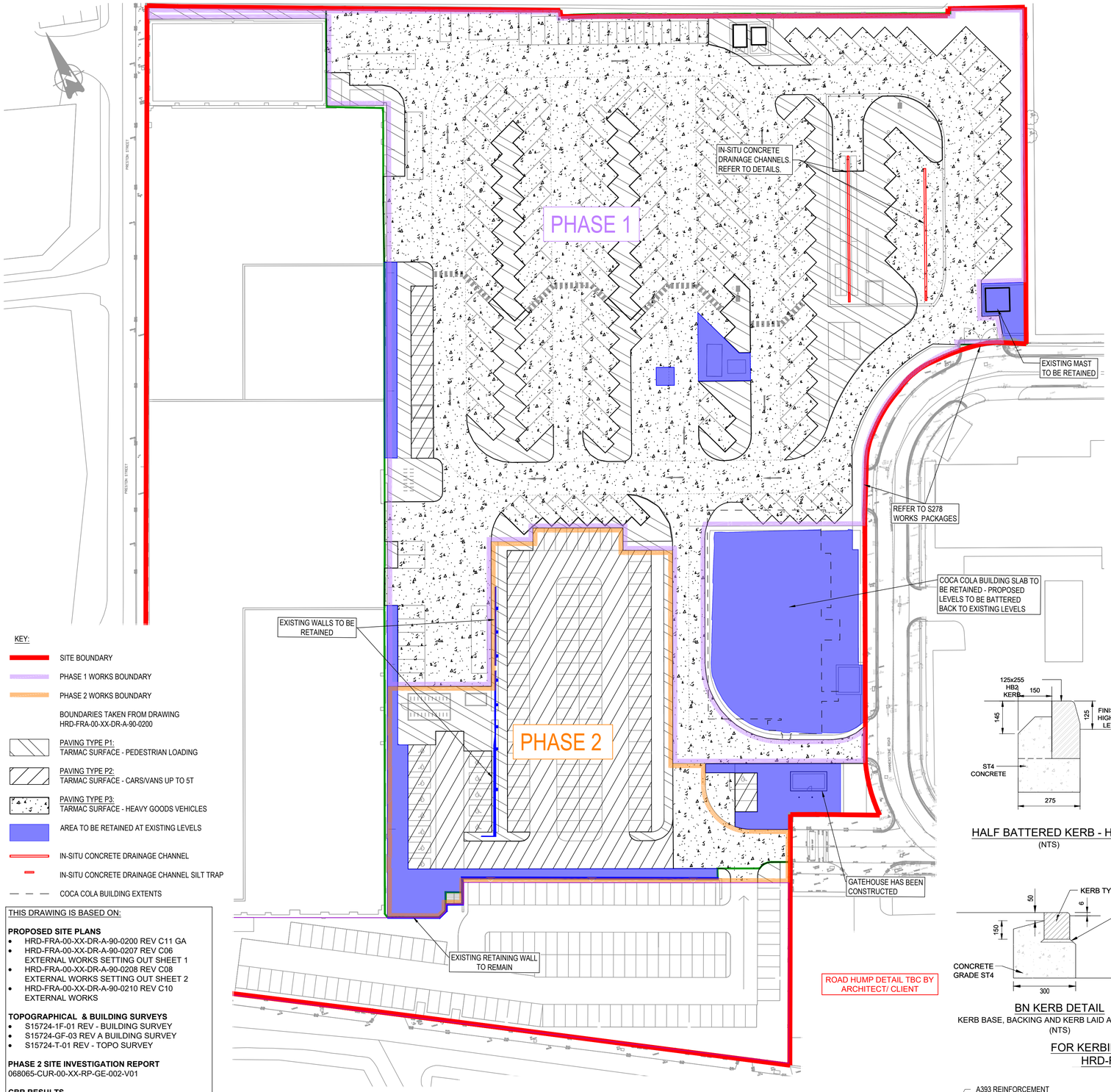


Simon Bradbeer - RD&I Director - Gatic - Poulton Close - Dover - Kent - CT17 0UF

Date: 24/10/2016

bsi. ISO 9001 Quality Management FM593418

bsi. ISO 14001 Environmental Management EMS593419



KEY:

- SITE BOUNDARY
- PHASE 1 WORKS BOUNDARY
- PHASE 2 WORKS BOUNDARY

BOUNDARIES TAKEN FROM DRAWING HRD-FRA-00-XX-DR-A-90-0200

- PAVING TYPE P1: TARMAC SURFACE - PEDESTRIAN LOADING
- PAVING TYPE P2: TARMAC SURFACE - CARS/VANS UP TO 5T
- PAVING TYPE P3: TARMAC SURFACE - HEAVY GOODS VEHICLES
- AREA TO BE RETAINED AT EXISTING LEVELS
- IN-SITU CONCRETE DRAINAGE CHANNEL
- IN-SITU CONCRETE DRAINAGE CHANNEL SILT TRAP
- COCA COLA BUILDING EXTENTS

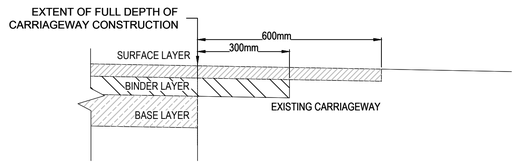
THIS DRAWING IS BASED ON:

PROPOSED SITE PLANS
- HRD-FRA-00-XX-DR-A-90-0200 REV C11 GA
- HRD-FRA-00-XX-DR-A-90-0207 REV C06 EXTERNAL WORKS SETTING OUT SHEET 1
- HRD-FRA-00-XX-DR-A-90-0208 REV C08 EXTERNAL WORKS SETTING OUT SHEET 2
- HRD-FRA-00-XX-DR-A-90-0210 REV C10 EXTERNAL WORKS

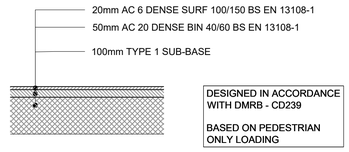
TOPOGRAPHICAL & BUILDING SURVEYS
- S15724-1F-01 REV - BUILDING SURVEY
- S15724-GF-03 REV A BUILDING SURVEY
- S15724-T-01 REV - TOPO SURVEY

PHASE 2 SITE INVESTIGATION REPORT
068065-CUR-00-XX-RP-GE-002-V01

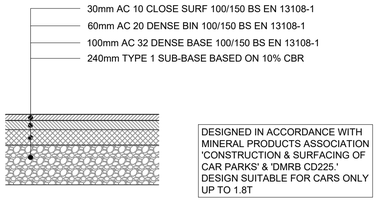
CBR RESULTS
785148.R01(00) - PLATE LOADING TEST REPORT



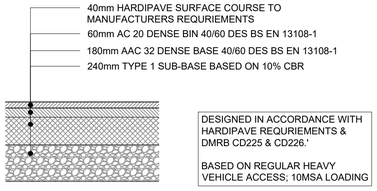
TIE-IN BETWEEN PROPOSED & EXISTING CARRIAGEWAY



PAVING TYPE P1:
TARMAC SURFACE - PEDESTRIAN LOADING



PAVING TYPE P2:
TARMAC SURFACE - CARS/VANS UP TO 5T



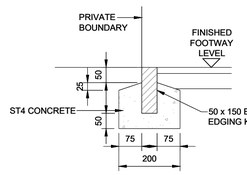
PAVING TYPE P3:
TARMAC SURFACE - HEAVY GOODS VEHICLES

TABLE 1: ALTERNATIVE PAVEMENT FOUNDATION THICKNESSES FOR VARYING CBR VALUES
APPLIES PAVING TYPE P2 & P3 (ALTERNATIVE OPTION) ONLY

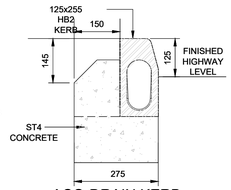
CBR VALUE	SUB-BASE ONLY THICKNESS	SUB-BASE ON CAPPING	
		SUB-BASE	CAPPING
5%	280mm	200mm	250mm
10%	240mm	150mm	200mm
15% & ABOVE	200mm	150mm	150mm

VALUES IN TABLE 1 ARE DERIVED FROM FIGURES 3.18 & 3.20 OF CD225. REFER TO DRAWING HRD-CUR-XX-00-DR-C-98-000 FOR CBR TEST RESULT LOCATIONS & VALUES.

HALF BATTERED KERB - HB2
(NTS)

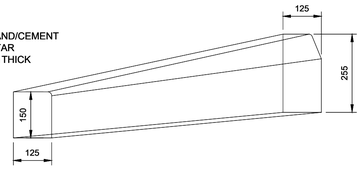


EK - EDGING KERB DETAIL
(NTS)



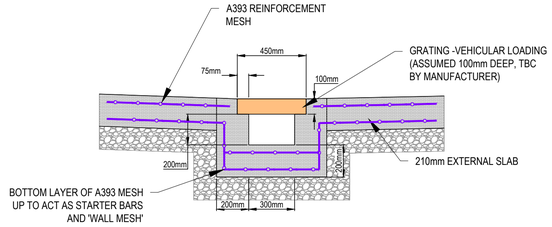
ACO-DRAIN KERB
(NTS)

BN KERB DETAIL
KERB BASE, BACKING AND KERB LAID AT SAME TIME
(NTS)

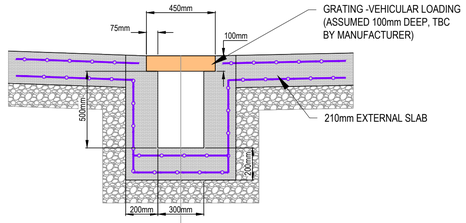


TRANSITION KERB (HB- BN) - TK1
(NTS)

FOR KERBING LOCATIONS REFER TO DRAWING HRD-FRA-00-XX-DR-A-90-0207 & 0208



IN-SITU CONCRETE DRAINAGE CHANNEL



IN-SITU CONCRETE DRAINAGE CHANNEL SUMP UNIT SECTION

GENERAL NOTES:

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTS AND ENGINEERS DRAWINGS AND SPECIFICATIONS.
2. DO NOT SCALE THIS DRAWING. ANY AMBIGUITIES, OMISSIONS AND ERRORS ON DRAWINGS SHALL BE BROUGHT TO THE ENGINEERS ATTENTION IMMEDIATELY. ALL DIMENSIONS MUST BE CHECKED / VERIFIED ON SITE.
3. ALL WORKS AND MATERIALS TO BE IN ACCORDANCE WITH CURRENT BRITISH STANDARDS AND BUILDING REGULATIONS.
4. THE LANDSCAPE ARCHITECT'S DRAWING HAS BEEN USED AS A BASE FOR THIS PLAN. PLEASE REFER TO THE LATEST LANDSCAPING LAYOUT.
5. REFER TO LANDSCAPE ARCHITECTS SPECIFICATION FOR SURFACE FINISHES.
6. KERBING REQUIREMENTS/DETAILS TO BE CONFIRMED BY LANDSCAPE ARCHITECT.
7. REFER TO LANDSCAPE ARCHITECTS SPECIFICATION FOR JOINTING MATERIAL. CONSIDERATION REQUIRED OF COMPATIBILITY OF JOINTING AND BEDDING MATERIAL AND WHETHER SUB-SURFACE DRAINAGE IS REQUIRED.
8. ALL SUB-BASES AND CAPPING LAYERS TO BE GRADED AND COMPACTED IN ACCORDANCE WITH THE SPECIFICATION FOR HIGHWAY WORKS (SFHW).
9. ALL PAVEMENT CONSTRUCTIONS ARE BASED ON AN ASSUMED CBR VALUE OF 5%. TO BE CONFIRMED BY INSITU TESTING AT FORMATION.
10. IT IS RECOMMENDED THAT CBR TESTS ARE CARRIED OUT TO CONFIRM AND SUB-BASE ADJUSTED IN ACCORDANCE WITH THE CAPPING AND SUB-BASE THICKNESS TABLE.
11. CBR TEST PROCEDURE IS DETAILED WITHIN DMRB IAN73/06 AND BS 1377-4.
12. MEASURED CBR VALUE TO BE AT FORMATION LEVEL AND TO BE A 'SOAKED' CONDITION.
13. ANY VARIATIONS IN GROUND CONDITIONS SHOULD BE NOTIFIED TO THE ENGINEER PRIOR TO CONSTRUCTION.
14. THE CONSTRUCTION DEPTHS GIVEN ARE THE MINIMUM REQUIRED (COMPACTED).
15. THE CONSTRUCTION DEPTHS GIVEN ASSUME FORMATION IS NON-FROST SUSCEPTIBLE.
16. WHERE FORMATION IS FROST SUSCEPTIBLE PROVIDE CAPPING MATERIAL TO GIVE A MINIMUM 450mm OVERALL CONSTRUCTION THICKNESS.
17. THE CONSTRUCTIONS GIVEN ARE FOR PRIVATE AREAS ONLY AND NOT FOR ADOPTABLE AREAS.
18. IN AREAS WHERE LEVELS ARE TO BE RAISED, ACCEPTABLE FILL MATERIAL IS TO BE USED TO THE UNDERSIDE OF THE PROPOSED CONSTRUCTION MAKE UP.
19. NO REGULATING OR FILL MATERIAL HAS BEEN INCLUDED IN CONSTRUCTION BUILD UP. CONTRACTOR TO INCLUDE FOR REGULATING/FILL MATERIAL IN THEIR RATES.
20. IN AREAS WHERE LEVELS ARE TO BE LOWERED, EXISTING CONSTRUCTION IS TO BE REMOVED (FULL DEPTH).
21. CONSTRUCTION OF CONCRETE SURFACES SUBJECT TO CASTING IN APPROPRIATE BAY SIZES / LENGTHS.
22. CONTRACTOR TO ALLOW FOR CONTRACTION JOINTING WITHIN CONCRETE AREAS.
23. TYPE 1 SUB-BASE IN ACCORDANCE WITH SFHW.
24. CAPPING MATERIAL TO BE 6F1, 6F2 OR 6F5 MATERIAL IN ACCORDANCE WITH SFHW 600 SERIES.

Rev:	Description:	Date:	By:	Chkd:
C03	UPDATED TO SUIT LATEST SITE LAYOUT	20.09.24	JC	ATL
P12	UPDATED IN LINE WITH COMMENTS/ UPDATED SITE LAYOUT	04.04.24	KS	ATL
P11	UPDATED FOR NEW TENDER	19/01/24	ATL	MW
C02	TIE IN DETAILS ADDED	25.11.22	ATL	MW
C01	CONSTRUCTION ISSUE	23.09.22	ATL	MW
P10	UPDATED SITE PLAN	05.07.22	LK	MW
P09	UPDATED IN LINE WITH REVISED ARCHITECT'S SITE PLAN	03.08.21	ATL	MW
P08	UPDATED IN LINE WITH ARCHITECT'S COMMENTS 27.04.21	28.04.21	ATL	MW
P07	DRAWING NUMBER CHANGE	15/04/21	ATL	ATL
P06	STAGE 4 UPDATE: LAYOUT UPDATED	13.04.21	ATL	MW

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Status: STAGE 5

Project: HAMMERSTONE ROAD

Drg Title: EXTERNAL SURFACES

Project No.	Size:	Date:	Drawn By:	Designed By:	Checked By:
068065	A1	29.01.19	MW	MW	CG
	Scale: 1:500				

Project Code: Originator: Zone: Level: Type: Discipline: Category / Number: Rev:

HRD - CUR - XX - 00 - DR - C - 94-700 -C03

\\ms-fs-1\Projects\068001 - 069000\068065 - Hammerstone Road Depot\0MS 4 Production\4B Models & Drawings_Civil-CUR\

Appendix J

Drainage Calculations

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Design Settings

Rainfall Methodology	FSR	Maximum Time of Concentration (mins)	30.00
Return Period (years)	100	Maximum Rainfall (mm/hr)	50.0
Additional Flow (%)	40	Minimum Velocity (m/s)	1.00
FSR Region	England and Wales	Connection Type	Level Soffits
M5-60 (mm)	17.000	Minimum Backdrop Height (m)	0.200
Ratio-R	0.400	Preferred Cover Depth (m)	1.200
CV	1.000	Include Intermediate Ground	✓
Time of Entry (mins)	5.00	Enforce best practice design rules	x

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Width (mm)	Easting (m)	Northing (m)	Depth (m)
RE PP1	0.054	5.00	64.228	1050		388217.969	396792.564	0.728
BEND PP2	0.015	5.00	64.190			388222.636	396809.328	0.864
BEND PP3	0.017	5.00	64.173			388227.222	396811.236	0.897
BEND PP4	0.010	5.00	64.201			388228.707	396816.433	0.979
BEND PP5	0.036	5.00	64.226			388227.505	396819.384	1.036
BEND PP6	0.012	5.00	64.224			388230.577	396830.686	1.151
S13b			64.240	1500		388233.850	396833.005	1.207
S13a			64.950	600		388234.268	396841.868	2.028
OU-11	0.080	5.00	64.802	350	350	388223.217	396846.588	1.000
S13			64.740	1500		388215.386	396857.536	2.200
OU-12	0.140	5.00	64.076	350	350	388166.406	396933.001	1.000
OU-13	0.126	5.00	64.031	350	350	388160.291	396909.984	1.000
S14			64.109	1500		388161.619	396906.443	1.528
OU-14	0.061	5.00	64.083	350	350	388154.700	396888.867	1.000
JUN-02			64.198			388157.755	396886.834	1.674
OU-15	0.087	5.00	64.232	350	350	388134.099	396812.930	1.000
S15	0.020	5.00	64.337	1500		388139.128	396813.380	1.155
OU-16	0.054	5.00	64.189	350	350	388143.485	396846.718	0.891
JUN-03			64.298			388148.482	396847.344	1.468
OU-17	0.067	5.00	64.136	350	350	388149.095	396867.801	1.000
S16			64.268	1500		388153.752	396866.521	1.803
OU-18	0.020	5.00	64.610	350	350	388162.166	396859.305	1.000
JUN-04			64.663			388169.376	396866.553	2.309
OU-08	0.017	5.00	64.159	350	350	388224.815	396784.079	1.000
S07	0.011	5.00	64.477	600		388214.211	396778.207	1.047
OU-01	0.003	5.00	64.420	350	350	388204.601	396773.900	1.000
S08			64.403	600		388202.250	396781.488	1.350
S09			64.460	1500		388202.428	396789.026	1.605
OU-02	0.068	5.00	64.063	350	350	388193.388	396777.976	1.000
S01			64.107	600		388191.358	396781.014	1.129
OU-07	0.040	5.00	64.345	350	350	388197.166	396791.687	1.350
S10			64.430	600		388195.512	396791.365	1.694
OU-04	0.130	5.00	64.093	350	350	388149.305	396788.915	1.000
OU-03	0.055	5.00	64.252	350	350	388164.599	396784.686	1.000
S03			64.291	1500		388166.728	396786.723	1.343
S04			64.433	1500		388171.539	396798.394	2.061
OU-05	0.060	5.00	64.417	350	350	388157.495	396819.066	1.000
OU-06	0.030	5.00	64.592	350	350	388173.489	396817.213	1.000
S05			64.659	1500		388177.568	396820.189	2.512
S11	0.013	5.00	64.531	450		388196.518	396814.994	0.731

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Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Width (mm)	Easting (m)	Northing (m)	Depth (m)
S12	0.013	5.00	64.676	450		388200.834	396830.772	0.700
S17A			64.822	1500		388181.897	396835.980	2.722
S17			64.680	1500		388188.257	396867.644	2.680
OU-19	0.081	5.00	64.800	350	350	388256.281	396929.299	1.000
S18			64.560	1500		388236.014	396932.498	1.245
OU-20	0.073	5.00	64.507	350	350	388223.207	396917.885	1.000
OU-21	0.060	5.00	64.564	350	350	388239.483	396908.335	1.000
S19			64.480	1500		388230.077	396910.923	1.330
KO-01	0.033	5.00	64.202	350	350	388262.984	396869.222	0.790
OU-22	0.047	5.00	64.496	350	350	388265.455	396876.733	0.881
S20			64.730	1500		388261.407	396877.847	1.569
OU-23	0.060	5.00	64.573	350	350	388229.757	396871.909	1.000
OU-24	0.060	5.00	64.528	350	350	388234.487	396890.122	1.000
JUN S22A			64.576			388229.800	396886.545	1.634
OU-26	0.073	5.00	64.279	350	350	388215.721	396889.840	0.817
OU-25	0.073	5.00	64.312	350	350	388211.947	396875.699	0.805
S22			64.330	1500		388213.557	396891.015	1.729
OU-27	0.090	5.00	64.473	350	350	388192.039	396926.186	1.350
S23			64.499	600		388189.987	396910.486	1.843
OU-28	0.118	5.00	64.457	350	350	388185.887	396903.148	1.000
JUN-05			64.483			388187.729	396902.281	1.861
OU-29	0.061	5.00	64.500	350	350	388181.023	396884.928	1.000
S24			64.597	1500		388182.786	396884.320	2.050
OU-30	0.052	5.00	64.198	350	350	388203.533	396881.236	1.350
S25			64.637	1500		388191.349	396882.020	2.730
S26			64.660	1500		388188.359	396874.610	2.994
PI			64.577	600		388181.875	396876.751	3.007
S27			64.754	1800		388170.636	396879.830	3.499
TANK			64.540			388177.005	396903.633	3.370
S28			64.536	1500		388179.853	396906.968	3.384
S29			64.553	1800		388191.433	396939.763	4.003
JUN S17A			64.652			388200.818	396862.879	2.215

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
12.000	RE PP1	BEND PP2	17.402	0.600	63.500	63.326	0.174	100.0	225	5.22	50.0
12.001	BEND PP2	BEND PP3	4.967	0.600	63.326	63.276	0.050	100.0	225	5.29	50.0
12.002	BEND PP3	BEND PP4	5.405	0.600	63.276	63.222	0.054	100.0	225	5.35	50.0
12.003	BEND PP4	BEND PP5	3.186	0.600	63.222	63.190	0.032	100.0	225	5.39	50.0
12.004	BEND PP5	BEND PP6	11.712	0.600	63.190	63.073	0.117	100.0	225	5.54	50.0

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
12.000	1.307	52.0	13.7	0.503	0.639	0.054	0.0	79	1.107
12.001	1.307	52.0	17.5	0.639	0.672	0.069	0.0	90	1.184
12.002	1.307	52.0	21.8	0.672	0.754	0.086	0.0	102	1.251
12.003	1.307	52.0	24.3	0.754	0.811	0.096	0.0	108	1.283
12.004	1.307	52.0	33.4	0.811	0.926	0.132	0.0	131	1.386

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Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
12.005	BEND PP6	S13b	4.011	0.600	63.073	63.033	0.040	100.0	225	5.60	50.0
12.006	S13b	S13a	8.873	0.600	63.033	62.922	0.111	80.0	225	5.70	50.0
12.007	S13a	S13	24.536	0.600	62.922	62.615	0.307	80.0	225	5.98	50.0
14.000	OU-11	S13	13.460	0.600	63.802	63.667	0.135	100.0	225	5.17	50.0
12.008	S13	JUN S17A	15.517	0.600	62.540	62.437	0.103	150.0	300	6.18	50.0
16.000	OU-12	S14	26.986	0.600	63.076	62.806	0.270	100.0	225	5.34	50.0
17.000	OU-13	S14	3.782	0.600	63.031	62.806	0.225	16.8	225	5.02	50.0
16.001	S14	JUN-02	19.986	0.600	62.581	62.524	0.057	350.0	450	5.65	50.0
18.000	OU-14	JUN-02	3.670	0.600	63.083	62.824	0.259	14.2	225	5.02	50.0
16.002	JUN-02	S16	20.704	0.600	62.524	62.465	0.059	350.0	450	5.97	50.0
19.000	OU-15	S15	5.049	0.600	63.232	63.182	0.050	100.0	300	5.05	50.0
19.001	S15	JUN-03	35.229	0.600	63.182	62.830	0.352	100.0	300	5.43	50.0
20.000	OU-16	JUN-03	5.036	0.600	63.298	62.980	0.318	15.8	150	5.03	50.0
19.002	JUN-03	S16	19.888	0.600	62.830	62.631	0.199	100.0	300	5.64	50.0
21.000	OU-17	S16	4.830	0.600	63.136	63.104	0.032	150.0	225	5.08	50.0
16.003	S16	JUN-04	15.624	0.600	62.465	62.354	0.111	140.7	450	6.12	50.0
22.000	OU-18	JUN-04	10.223	0.600	63.610	62.676	0.934	10.9	150	5.06	50.0
16.004	JUN-04	S17	18.912	0.600	62.354	62.160	0.194	97.5	450	6.28	50.0
1.000	OU-08	S09	22.927	0.600	63.159	62.930	0.229	100.0	150	5.38	50.0
2.000	S07	S08	12.403	0.600	63.430	63.128	0.302	41.1	150	5.13	50.0
3.000	OU-01	S08	7.944	0.600	63.420	63.053	0.367	21.6	225	5.05	50.0
2.001	S08	S09	7.540	0.600	63.053	62.978	0.075	100.0	225	5.23	50.0
1.001	S09	S10	7.301	0.600	62.855	62.811	0.044	167.0	225	5.50	50.0
4.000	OU-02	S01	3.654	0.600	63.063	62.978	0.085	43.0	300	5.03	50.0

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
12.005	1.307	52.0	36.4	0.926	0.982	0.144	0.0	139	1.412
12.006	1.463	58.2	36.4	0.982	1.803	0.144	0.0	130	1.544
12.007	1.463	58.2	36.4	1.803	1.900	0.144	0.0	130	1.544
14.000	1.307	52.0	20.2	0.775	0.848	0.080	0.0	97	1.226
12.008	1.281	90.6	71.8	1.900	1.915	0.284	0.0	202	1.416
16.000	1.307	52.0	35.4	0.775	1.078	0.140	0.0	137	1.404
17.000	3.207	127.5	31.9	0.775	1.078	0.126	0.0	76	2.671
16.001	1.081	171.9	67.3	1.078	1.224	0.266	0.0	196	1.018
18.000	3.494	138.9	15.4	0.775	1.149	0.061	0.0	51	2.329
16.002	1.081	171.9	82.7	1.224	1.353	0.327	0.0	220	1.071
19.000	1.572	111.1	22.0	0.700	0.855	0.087	0.0	90	1.231
19.001	1.572	111.1	27.1	0.855	1.168	0.107	0.0	100	1.304
20.000	2.544	44.9	13.7	0.741	1.168	0.054	0.0	57	2.234
19.002	1.572	111.1	40.7	1.168	1.337	0.161	0.0	126	1.455
21.000	1.065	42.3	16.9	0.775	0.939	0.067	0.0	99	1.007
16.003	1.712	272.2	140.4	1.353	1.859	0.555	0.0	229	1.724
22.000	3.062	54.1	5.1	0.850	1.837	0.020	0.0	31	1.923
16.004	2.059	327.5	145.5	1.859	2.070	0.575	0.0	210	1.999
1.000	1.005	17.8	4.3	0.850	1.380	0.017	0.0	50	0.828
2.000	1.575	27.8	2.8	0.897	1.125	0.011	0.0	32	1.009
3.000	2.824	112.3	0.8	0.775	1.125	0.003	0.0	14	0.823
2.001	1.307	52.0	3.5	1.125	1.257	0.014	0.0	40	0.756
1.001	1.009	40.1	7.8	1.380	1.394	0.031	0.0	67	0.786
4.000	2.404	170.0	17.2	0.700	0.829	0.068	0.0	64	1.563

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Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
4.001	S01	S10	11.153	0.600	62.978	62.736	0.242	46.1	300	5.11	50.0
5.000	OU-07	S10	1.685	0.600	62.995	62.886	0.109	15.5	150	5.01	50.0
1.002	S10	S04	24.982	0.600	62.736	62.522	0.214	116.7	300	5.79	50.0
6.000	OU-04	S04	24.170	0.600	63.093	62.597	0.496	48.7	225	5.21	50.0
7.000	OU-03	S03	2.947	0.600	63.252	62.948	0.304	9.7	150	5.02	50.0
7.001	S03	S04	12.624	0.600	62.948	62.672	0.276	45.7	150	5.16	50.0
1.003	S04	S05	22.614	0.600	62.372	62.297	0.075	300.0	450	6.11	50.0
8.000	OU-05	S05	20.104	0.600	63.417	63.000	0.417	48.2	225	5.18	50.0
10.000	OU-06	S05	5.049	0.600	63.592	63.000	0.592	8.5	150	5.02	50.0
1.004_1	S05	S17A	16.374	0.600	62.147	62.100	0.047	350.0	600	6.32	50.0
1.004	S11	S05	9.581	0.600	63.800	63.000	0.800	12.0	150	5.05	50.0
11.000	S12	S17A	19.640	0.600	63.976	62.450	1.526	12.9	150	5.12	50.0
1.005	S17A	S17	32.296	0.600	62.100	62.000	0.100	323.0	600	6.72	50.0
1.006	S17	S26	6.967	0.600	62.000	61.985	0.015	450.0	600	6.82	50.0
23.000	OU-19	S18	20.518	0.600	63.800	63.390	0.410	50.0	225	5.18	50.0
23.001	S18	S19	22.377	0.600	63.315	63.225	0.090	250.0	300	5.56	50.0
24.000	OU-20	S19	9.781	0.600	63.507	63.300	0.207	47.3	150	5.11	50.0
25.000	OU-21	S19	9.756	0.600	63.564	63.300	0.264	37.0	225	5.08	50.0
23.002	S19	S22	25.870	0.600	63.150	62.751	0.399	64.8	300	5.78	50.0
26.000	KO-01	S20	8.768	0.600	63.412	63.237	0.175	50.0	225	5.08	50.0
27.000	OU-22	S20	4.198	0.600	63.615	63.236	0.379	11.1	150	5.02	50.0
26.001	S20	JUN S22A	32.782	0.600	63.161	62.942	0.219	150.0	225	5.59	50.0
13.000	OU-23	S13	20.325	0.600	63.573	63.370	0.203	100.0	225	5.26	50.0

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
4.001	2.322	164.1	17.2	0.829	1.394	0.068	0.0	65	1.524
5.000	2.575	45.5	10.1	1.200	1.394	0.040	0.0	48	2.073
1.002	1.454	102.8	35.2	1.394	1.611	0.139	0.0	121	1.322
6.000	1.878	74.7	32.9	0.775	1.611	0.130	0.0	104	1.818
7.000	3.255	57.5	13.9	0.850	1.193	0.055	0.0	50	2.688
7.001	1.491	26.4	13.9	1.193	1.611	0.055	0.0	78	1.513
1.003	1.168	185.8	82.0	1.611	1.912	0.324	0.0	209	1.132
8.000	1.888	75.1	15.2	0.775	1.434	0.060	0.0	68	1.484
10.000	3.471	61.3	7.6	0.850	1.509	0.030	0.0	35	2.369
1.004_1	1.296	366.3	108.0	1.912	2.122	0.427	0.0	222	1.134
1.004	2.927	51.7	3.3	0.581	1.509	0.013	0.0	25	1.641
11.000	2.823	49.9	3.3	0.550	2.222	0.013	0.0	26	1.605
1.005	1.349	381.5	111.3	2.122	2.080	0.440	0.0	221	1.178
1.006	1.141	322.7	347.1	2.080	2.075	1.372	0.0	600	1.151
23.000	1.854	73.7	20.5	0.775	0.945	0.081	0.0	81	1.597
23.001	0.990	70.0	20.5	0.945	0.955	0.081	0.0	111	0.863
24.000	1.467	25.9	18.5	0.850	1.030	0.073	0.0	93	1.590
25.000	2.159	85.8	15.2	0.775	0.955	0.060	0.0	64	1.637
23.002	1.955	138.2	54.1	1.030	1.279	0.214	0.0	130	1.841
26.000	1.854	73.7	8.3	0.565	1.268	0.033	0.0	51	1.234
27.000	3.044	53.8	11.9	0.731	1.344	0.047	0.0	48	2.451
26.001	1.065	42.3	20.2	1.344	1.409	0.080	0.0	109	1.053
13.000	1.307	52.0	15.2	0.775	1.145	0.060	0.0	83	1.137

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Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
28.000	OU-24	JUN S22A	5.896	0.600	63.528	62.942	0.586	10.1	225	5.02	50.0
26.002	JUN S22A	S22	16.847	0.600	62.942	62.830	0.112	150.0	225	5.86	50.0
29.000	OU-26	S22	2.462	0.600	63.462	63.273	0.189	13.0	225	5.01	50.0
15.000	OU-25	JUN S17A	16.977	0.600	63.507	62.587	0.920	18.5	150	5.12	50.0
23.003	S22	S25	23.960	0.600	62.601	62.207	0.394	60.8	450	6.01	50.0
30.000	OU-27	S23	15.834	0.600	63.123	62.731	0.392	40.4	225	5.13	50.0
30.001	S23	JUN-05	8.510	0.600	62.656	62.622	0.034	250.0	300	5.27	50.0
31.000	OU-28	JUN-05	2.036	0.600	63.457	62.697	0.760	2.7	225	5.00	50.0
30.002	JUN-05	S24	18.629	0.600	62.622	62.547	0.075	250.0	300	5.58	50.0
32.000	OU-29	S24	1.865	0.600	63.500	63.481	0.019	100.0	150	5.03	50.0
30.003	S24	S25	8.867	0.600	62.547	62.207	0.340	26.1	300	5.63	50.0
33.000	OU-30	S25	12.209	0.600	62.848	62.780	0.068	179.5	150	5.27	50.0
23.004	S25	S26	7.991	0.600	61.907	61.666	0.241	33.2	600	6.04	50.0
1.007	S26	PI	6.828	0.600	61.666	61.651	0.015	450.0	600	6.92	50.0
1.009	PI	S27	5.432	0.600	61.570	61.554	0.016	339.5	600	6.99	50.0
1.010	S27	TANK	21.145	0.600	61.255	61.170	0.085	248.8	375	7.30	50.0
1.011	TANK	S28	2.452	0.600	61.170	61.161	0.009	272.4	375	7.34	50.0
1.012	S28	S29	37.587	0.600	61.152	60.550	0.602	62.4	300	7.65	50.0
12.009	JUN S17A	S17	13.434	0.600	62.437	62.160	0.277	48.5	300	6.28	50.0

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
28.000	4.149	165.0	15.2	0.775	1.409	0.060	0.0	46	2.624
26.002	1.065	42.3	35.4	1.409	1.275	0.140	0.0	158	1.188
29.000	3.644	144.9	18.5	0.592	0.832	0.073	0.0	54	2.524
15.000	2.355	41.6	18.5	0.655	1.915	0.073	0.0	70	2.287
23.003	2.610	415.1	108.0	1.279	1.980	0.427	0.0	156	2.210
30.000	2.064	82.1	22.8	1.125	1.543	0.090	0.0	80	1.768
30.001	0.990	70.0	22.8	1.543	1.561	0.090	0.0	117	0.887
31.000	8.053	320.2	29.9	0.775	1.561	0.118	0.0	46	5.098
30.002	0.990	70.0	52.6	1.561	1.750	0.208	0.0	195	1.083
32.000	1.005	17.8	15.4	0.850	0.966	0.061	0.0	108	1.129
30.003	3.091	218.5	68.1	1.750	2.130	0.269	0.0	115	2.739
33.000	0.747	13.2	13.2	1.200	1.707	0.052	0.0	123	0.849
23.004	4.238	1198.3	189.2	2.130	2.394	0.748	0.0	160	3.135
1.007	1.141	322.7	536.3	2.394	2.326	2.120	0.0	600	1.151
1.009	1.316	372.0	536.3	2.407	2.600	2.120	0.0	600	1.327
1.010	1.144	379.0	536.3	3.124	2.995	2.120	0.0	375	1.159
1.011	1.093	120.7	536.3	2.995	3.000	2.120	0.0	375	1.107
1.012	1.993	140.9	536.3	3.084	3.703	2.120	0.0	300	2.018
12.009	2.263	159.9	90.3	1.915	2.220	0.357	0.0	161	2.329

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Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
12.000	17.402	100.0	225	1 STANDARD	64.228	63.500	0.503	64.190	63.326	0.639
12.001	4.967	100.0	225	1 STANDARD	64.190	63.326	0.639	64.173	63.276	0.672
12.002	5.405	100.0	225	1 STANDARD	64.173	63.276	0.672	64.201	63.222	0.754
12.003	3.186	100.0	225	1 STANDARD	64.201	63.222	0.754	64.226	63.190	0.811
12.004	11.712	100.0	225	1 STANDARD	64.226	63.190	0.811	64.224	63.073	0.926
12.005	4.011	100.0	225	1 STANDARD	64.224	63.073	0.926	64.240	63.033	0.982
12.006	8.873	80.0	225	1 STANDARD	64.240	63.033	0.982	64.950	62.922	1.803
12.007	24.536	80.0	225	1 STANDARD	64.950	62.922	1.803	64.740	62.615	1.900
14.000	13.460	100.0	225	1 STANDARD	64.802	63.802	0.775	64.740	63.667	0.848
12.008	15.517	150.0	300	1 STANDARD	64.740	62.540	1.900	64.652	62.437	1.915
16.000	26.986	100.0	225	1 STANDARD	64.076	63.076	0.775	64.109	62.806	1.078
17.000	3.782	16.8	225	1 STANDARD	64.031	63.031	0.775	64.109	62.806	1.078
16.001	19.986	350.0	450	1 STANDARD	64.109	62.581	1.078	64.198	62.524	1.224
18.000	3.670	14.2	225	1 STANDARD	64.083	63.083	0.775	64.198	62.824	1.149
16.002	20.704	350.0	450	1 STANDARD	64.198	62.524	1.224	64.268	62.465	1.353
19.000	5.049	100.0	300	1 STANDARD	64.232	63.232	0.700	64.337	63.182	0.855
19.001	35.229	100.0	300	1 STANDARD	64.337	63.182	0.855	64.298	62.830	1.168
20.000	5.036	15.8	150	1 STANDARD	64.189	63.298	0.741	64.298	62.980	1.168
19.002	19.888	100.0	300	1 STANDARD	64.298	62.830	1.168	64.268	62.631	1.337
21.000	4.830	150.0	225	1 STANDARD	64.136	63.136	0.775	64.268	63.104	0.939
16.003	15.624	140.7	450	1 STANDARD	64.268	62.465	1.353	64.663	62.354	1.859
22.000	10.223	10.9	150	1 STANDARD	64.610	63.610	0.850	64.663	62.676	1.837
16.004	18.912	97.5	450	1 STANDARD	64.663	62.354	1.859	64.680	62.160	2.070
1.000	22.927	100.0	150	1 STANDARD	64.159	63.159	0.850	64.460	62.930	1.380
2.000	12.403	41.1	150	1 STANDARD	64.477	63.430	0.897	64.403	63.128	1.125

Link	US Node	Dia (mm)	Width (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
12.000	RE PP1	1050		Manhole	1 STANDARD	BEND PP2		Junction	
12.001	BEND PP2			Junction		BEND PP3		Junction	
12.002	BEND PP3			Junction		BEND PP4		Junction	
12.003	BEND PP4			Junction		BEND PP5		Junction	
12.004	BEND PP5			Junction		BEND PP6		Junction	
12.005	BEND PP6			Junction		S13b	1500	Manhole	1 STANDARD
12.006	S13b	1500		Manhole	1 STANDARD	S13a	600	Manhole	1 STANDARD
12.007	S13a	600		Manhole	1 STANDARD	S13	1500	Manhole	1 STANDARD
14.000	OU-11	350	350	Manhole	1 STANDARD	S13	1500	Manhole	1 STANDARD
12.008	S13	1500		Manhole	1 STANDARD	JUN S17A		Junction	
16.000	OU-12	350	350	Manhole	1 STANDARD	S14	1500	Manhole	1 STANDARD
17.000	OU-13	350	350	Manhole	1 STANDARD	S14	1500	Manhole	1 STANDARD
16.001	S14	1500		Manhole	1 STANDARD	JUN-02		Junction	
18.000	OU-14	350	350	Manhole	1 STANDARD	JUN-02		Junction	
16.002	JUN-02			Junction		S16	1500	Manhole	1 STANDARD
19.000	OU-15	350	350	Manhole	1 STANDARD	S15	1500	Manhole	1 STANDARD
19.001	S15	1500		Manhole	1 STANDARD	JUN-03		Junction	
20.000	OU-16	350	350	Manhole	1 STANDARD	JUN-03		Junction	
19.002	JUN-03			Junction		S16	1500	Manhole	1 STANDARD
21.000	OU-17	350	350	Manhole	1 STANDARD	S16	1500	Manhole	1 STANDARD
16.003	S16	1500		Manhole	1 STANDARD	JUN-04		Junction	
22.000	OU-18	350	350	Manhole	1 STANDARD	JUN-04		Junction	
16.004	JUN-04			Junction		S17	1500	Manhole	1 STANDARD
1.000	OU-08	350	350	Manhole	1 STANDARD	S09	1500	Manhole	1 STANDARD
2.000	S07	600		Manhole	1 STANDARD	S08	600	Manhole	1 STANDARD

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Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
3.000	7.944	21.6	225	1 STANDARD	64.420	63.420	0.775	64.403	63.053	1.125
2.001	7.540	100.0	225	1 STANDARD	64.403	63.053	1.125	64.460	62.978	1.257
1.001	7.301	167.0	225	1 STANDARD	64.460	62.855	1.380	64.430	62.811	1.394
4.000	3.654	43.0	300	1 STANDARD	64.063	63.063	0.700	64.107	62.978	0.829
4.001	11.153	46.1	300	1 STANDARD	64.107	62.978	0.829	64.430	62.736	1.394
5.000	1.685	15.5	150	1 STANDARD	64.345	62.995	1.200	64.430	62.886	1.394
1.002	24.982	116.7	300	1 STANDARD	64.430	62.736	1.394	64.433	62.522	1.611
6.000	24.170	48.7	225	1 STANDARD	64.093	63.093	0.775	64.433	62.597	1.611
7.000	2.947	9.7	150	1 STANDARD	64.252	63.252	0.850	64.291	62.948	1.193
7.001	12.624	45.7	150	1 STANDARD	64.291	62.948	1.193	64.433	62.672	1.611
1.003	22.614	300.0	450	1 STANDARD	64.433	62.372	1.611	64.659	62.297	1.912
8.000	20.104	48.2	225	1 STANDARD	64.417	63.417	0.775	64.659	63.000	1.434
10.000	5.049	8.5	150	1 STANDARD	64.592	63.592	0.850	64.659	63.000	1.509
1.004_1	16.374	350.0	600	1 STANDARD	64.659	62.147	1.912	64.822	62.100	2.122
1.004	9.581	12.0	150	1 STANDARD	64.531	63.800	0.581	64.659	63.000	1.509
11.000	19.640	12.9	150	1 STANDARD	64.676	63.976	0.550	64.822	62.450	2.222
1.005	32.296	323.0	600	1 STANDARD	64.822	62.100	2.122	64.680	62.000	2.080
1.006	6.967	450.0	600	1 STANDARD	64.680	62.000	2.080	64.660	61.985	2.075
23.000	20.518	50.0	225	1 STANDARD	64.800	63.800	0.775	64.560	63.390	0.945
23.001	22.377	250.0	300	1 STANDARD	64.560	63.315	0.945	64.480	63.225	0.955
24.000	9.781	47.3	150	1 STANDARD	64.507	63.507	0.850	64.480	63.300	1.030
25.000	9.756	37.0	225	1 STANDARD	64.564	63.564	0.775	64.480	63.300	0.955
23.002	25.870	64.8	300	1 STANDARD	64.480	63.150	1.030	64.330	62.751	1.279
26.000	8.768	50.0	225	1 STANDARD	64.202	63.412	0.565	64.730	63.237	1.268

Link	US Node	Dia (mm)	Width (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
3.000	OU-01	350	350	Manhole	1 STANDARD	S08	600	Manhole	1 STANDARD
2.001	S08	600		Manhole	1 STANDARD	S09	1500	Manhole	1 STANDARD
1.001	S09	1500		Manhole	1 STANDARD	S10	600	Manhole	1 STANDARD
4.000	OU-02	350	350	Manhole	1 STANDARD	S01	600	Manhole	1 STANDARD
4.001	S01	600		Manhole	1 STANDARD	S10	600	Manhole	1 STANDARD
5.000	OU-07	350	350	Manhole	1 STANDARD	S10	600	Manhole	1 STANDARD
1.002	S10	600		Manhole	1 STANDARD	S04	1500	Manhole	1 STANDARD
6.000	OU-04	350	350	Manhole	1 STANDARD	S04	1500	Manhole	1 STANDARD
7.000	OU-03	350	350	Manhole	1 STANDARD	S03	1500	Manhole	1 STANDARD
7.001	S03	1500		Manhole	1 STANDARD	S04	1500	Manhole	1 STANDARD
1.003	S04	1500		Manhole	1 STANDARD	S05	1500	Manhole	1 STANDARD
8.000	OU-05	350	350	Manhole	1 STANDARD	S05	1500	Manhole	1 STANDARD
10.000	OU-06	350	350	Manhole	1 STANDARD	S05	1500	Manhole	1 STANDARD
1.004_1	S05	1500		Manhole	1 STANDARD	S17A	1500	Manhole	1 STANDARD
1.004	S11	450		Manhole	1 STANDARD	S05	1500	Manhole	1 STANDARD
11.000	S12	450		Manhole	1 STANDARD	S17A	1500	Manhole	1 STANDARD
1.005	S17A	1500		Manhole	1 STANDARD	S17	1500	Manhole	1 STANDARD
1.006	S17	1500		Manhole	1 STANDARD	S26	1500	Manhole	1 STANDARD
23.000	OU-19	350	350	Manhole	1 STANDARD	S18	1500	Manhole	1 STANDARD
23.001	S18	1500		Manhole	1 STANDARD	S19	1500	Manhole	1 STANDARD
24.000	OU-20	350	350	Manhole	1 STANDARD	S19	1500	Manhole	1 STANDARD
25.000	OU-21	350	350	Manhole	1 STANDARD	S19	1500	Manhole	1 STANDARD
23.002	S19	1500		Manhole	1 STANDARD	S22	1500	Manhole	1 STANDARD
26.000	KO-01	350	350	Manhole	1 STANDARD	S20	1500	Manhole	1 STANDARD

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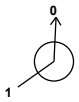
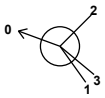
Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
27.000	4.198	11.1	150	1 STANDARD	64.496	63.615	0.731	64.730	63.236	1.344
26.001	32.782	150.0	225	1 STANDARD	64.730	63.161	1.344	64.576	62.942	1.409
13.000	20.325	100.0	225	1 STANDARD	64.573	63.573	0.775	64.740	63.370	1.145
28.000	5.896	10.1	225	1 STANDARD	64.528	63.528	0.775	64.576	62.942	1.409
26.002	16.847	150.0	225	1 STANDARD	64.576	62.942	1.409	64.330	62.830	1.275
29.000	2.462	13.0	225	1 STANDARD	64.279	63.462	0.592	64.330	63.273	0.832
15.000	16.977	18.5	150	1 STANDARD	64.312	63.507	0.655	64.652	62.587	1.915
23.003	23.960	60.8	450	1 STANDARD	64.330	62.601	1.279	64.637	62.207	1.980
30.000	15.834	40.4	225	1 STANDARD	64.473	63.123	1.125	64.499	62.731	1.543
30.001	8.510	250.0	300	1 STANDARD	64.499	62.656	1.543	64.483	62.622	1.561
31.000	2.036	2.7	225	1 STANDARD	64.457	63.457	0.775	64.483	62.697	1.561
30.002	18.629	250.0	300	1 STANDARD	64.483	62.622	1.561	64.597	62.547	1.750
32.000	1.865	100.0	150	1 STANDARD	64.500	63.500	0.850	64.597	63.481	0.966
30.003	8.867	26.1	300	1 STANDARD	64.597	62.547	1.750	64.637	62.207	2.130
33.000	12.209	179.5	150	1 STANDARD	64.198	62.848	1.200	64.637	62.780	1.707
23.004	7.991	33.2	600	1 STANDARD	64.637	61.907	2.130	64.660	61.666	2.394
1.007	6.828	450.0	600	1 STANDARD	64.660	61.666	2.394	64.577	61.651	2.326
1.009	5.432	339.5	600	1 STANDARD	64.577	61.570	2.407	64.754	61.554	2.600
1.010	21.145	248.8	375	Tank Connection X 3	64.754	61.255	3.124	64.540	61.170	2.995
1.011	2.452	272.4	375	1 STANDARD	64.540	61.170	2.995	64.536	61.161	3.000
1.012	37.587	62.4	300	1 STANDARD	64.536	61.152	3.084	64.553	60.550	3.703
12.009	13.434	48.5	300	1 STANDARD	64.652	62.437	1.915	64.680	62.160	2.220

Link	US Node	Dia (mm)	Width (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
27.000	OU-22	350	350	Manhole	1 STANDARD	S20	1500	Manhole	1 STANDARD
26.001	S20	1500		Manhole	1 STANDARD	JUN S22A		Junction	
13.000	OU-23	350	350	Manhole	1 STANDARD	S13	1500	Manhole	1 STANDARD
28.000	OU-24	350	350	Manhole	1 STANDARD	JUN S22A		Junction	
26.002	JUN S22A			Junction		S22	1500	Manhole	1 STANDARD
29.000	OU-26	350	350	Manhole	1 STANDARD	S22	1500	Manhole	1 STANDARD
15.000	OU-25	350	350	Manhole	1 STANDARD	JUN S17A		Junction	
23.003	S22	1500		Manhole	1 STANDARD	S25	1500	Manhole	1 STANDARD
30.000	OU-27	350	350	Manhole	1 STANDARD	S23	600	Manhole	1 STANDARD
30.001	S23	600		Manhole	1 STANDARD	JUN-05		Junction	
31.000	OU-28	350	350	Manhole	1 STANDARD	JUN-05		Junction	
30.002	JUN-05			Junction		S24	1500	Manhole	1 STANDARD
32.000	OU-29	350	350	Manhole	1 STANDARD	S24	1500	Manhole	1 STANDARD
30.003	S24	1500		Manhole	1 STANDARD	S25	1500	Manhole	1 STANDARD
33.000	OU-30	350	350	Manhole	1 STANDARD	S25	1500	Manhole	1 STANDARD
23.004	S25	1500		Manhole	1 STANDARD	S26	1500	Manhole	1 STANDARD
1.007	S26	1500		Manhole	1 STANDARD	PI	600	Manhole	1 STANDARD
1.009	PI	600		Manhole	1 STANDARD	S27	1800	Manhole	1 STANDARD
1.010	S27	1800		Manhole	1 STANDARD	TANK		Junction	
1.011	TANK			Junction		S28	1500	Manhole	1 STANDARD
1.012	S28	1500		Manhole	1 STANDARD	S29	1800	Manhole	1 STANDARD
12.009	JUN S17A			Junction		S17	1500	Manhole	1 STANDARD

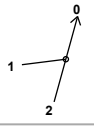
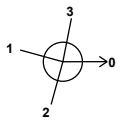
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Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Width (mm)	Connections	Link	IL (m)	Dia (mm)
RE PP1	388217.969	396792.564	64.228	0.728	1050					
							0	12.000	63.500	225
BEND PP2	388222.636	396809.328	64.190	0.864			1	12.000	63.326	225
										
							0	12.001	63.326	225
BEND PP3	388227.222	396811.236	64.173	0.897			1	12.001	63.276	225
										
							0	12.002	63.276	225
BEND PP4	388228.707	396816.433	64.201	0.979			1	12.002	63.222	225
										
							0	12.003	63.222	225
BEND PP5	388227.505	396819.384	64.226	1.036			1	12.003	63.190	225
										
							0	12.004	63.190	225
BEND PP6	388230.577	396830.686	64.224	1.151			1	12.004	63.073	225
										
							0	12.005	63.073	225
S13b	388233.850	396833.005	64.240	1.207	1500		1	12.005	63.033	225
										
							0	12.006	63.033	225
S13a	388234.268	396841.868	64.950	2.028	600		1	12.006	62.922	225
										
							0	12.007	62.922	225
OU-11	388223.217	396846.588	64.802	1.000	350	350				
							0	14.000	63.802	225
S13	388215.386	396857.536	64.740	2.200	1500		1	14.000	63.667	225
							2	13.000	63.370	225
										
							3	12.007	62.615	225
							0	12.008	62.540	300
OU-12	388166.406	396933.001	64.076	1.000	350	350				
							0	16.000	63.076	225
OU-13	388160.291	396909.984	64.031	1.000	350	350				
							0	17.000	63.031	225
S14	388161.619	396906.443	64.109	1.528	1500		1	17.000	62.806	225
							2	16.000	62.806	225
										
							0	16.001	62.581	450

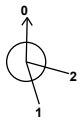
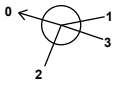
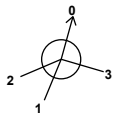
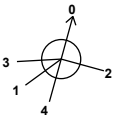
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Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Width (mm)	Connections	Link	IL (m)	Dia (mm)
OU-14	388154.700	396888.867	64.083	1.000	350	350				
							0	18.000	63.083	225
JUN-02	388157.755	396886.834	64.198	1.674				1	18.000	62.824	225
								2	16.001	62.524	450
							0	16.002	62.524	450
OU-15	388134.099	396812.930	64.232	1.000	350	350				
							0	19.000	63.232	300
S15	388139.128	396813.380	64.337	1.155	1500			1	19.000	63.182	300
							0	19.001	63.182	300
OU-16	388143.485	396846.718	64.189	0.891	350	350				
							0	20.000	63.298	150
JUN-03	388148.482	396847.344	64.298	1.468				1	20.000	62.980	150
								2	19.001	62.830	300
							0	19.002	62.830	300
OU-17	388149.095	396867.801	64.136	1.000	350	350				
							0	21.000	63.136	225
S16	388153.752	396866.521	64.268	1.803	1500			1	21.000	63.104	225
								2	19.002	62.631	300
								3	16.002	62.465	450
							0	16.003	62.465	450
OU-18	388162.166	396859.305	64.610	1.000	350	350				
							0	22.000	63.610	150
JUN-04	388169.376	396866.553	64.663	2.309				1	22.000	62.676	150
								2	16.003	62.354	450
							0	16.004	62.354	450
OU-08	388224.815	396784.079	64.159	1.000	350	350				
							0	1.000	63.159	150
S07	388214.211	396778.207	64.477	1.047	600					
							0	2.000	63.430	150
OU-01	388204.601	396773.900	64.420	1.000	350	350				
							0	3.000	63.420	225

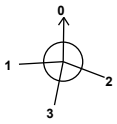
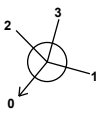
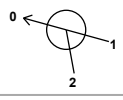
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Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Width (mm)	Connections	Link	IL (m)	Dia (mm)
S08	388202.250	396781.488	64.403	1.350	600			1 3.000	63.053	225
								2 2.000	63.128	150
								0 2.001	63.053	225
S09	388202.428	396789.026	64.460	1.605	1500			1 2.001	62.978	225
								2 1.000	62.930	150
								0 1.001	62.855	225
OU-02	388193.388	396777.976	64.063	1.000	350	350		0 4.000	63.063	300
S01	388191.358	396781.014	64.107	1.129	600			1 4.000	62.978	300
								0 4.001	62.978	300
OU-07	388197.166	396791.687	64.345	1.350	350	350		0 5.000	62.995	150
S10	388195.512	396791.365	64.430	1.694	600			1 5.000	62.886	150
								2 4.001	62.736	300
								3 1.001	62.811	225
								0 1.002	62.736	300
OU-04	388149.305	396788.915	64.093	1.000	350	350		0 6.000	63.093	225
OU-03	388164.599	396784.686	64.252	1.000	350	350		0 7.000	63.252	150
S03	388166.728	396786.723	64.291	1.343	1500			1 7.000	62.948	150
								0 7.001	62.948	150
S04	388171.539	396798.394	64.433	2.061	1500			1 7.001	62.672	150
								2 6.000	62.597	225
								3 1.002	62.522	300
								0 1.003	62.372	450
OU-05	388157.495	396819.066	64.417	1.000	350	350		0 8.000	63.417	225
OU-06	388173.489	396817.213	64.592	1.000	350	350		0 10.000	63.592	150
S05	388177.568	396820.189	64.659	2.512	1500			1 10.000	63.000	150
								2 1.004	63.000	150
								3 8.000	63.000	225
								4 1.003	62.297	450
								0 1.004_1	62.147	600

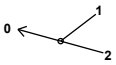
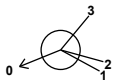
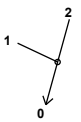
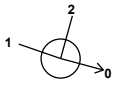
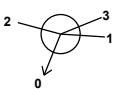
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Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Width (mm)	Connections	Link	IL (m)	Dia (mm)
S11	388196.518	396814.994	64.531	0.731	450					
							0	1.004	63.800	150
S12	388200.834	396830.772	64.676	0.700	450					
							0	11.000	63.976	150
S17A	388181.897	396835.980	64.822	2.722	1500			1	11.000	62.450	150
								2	1.004_1	62.100	600
							0	1.005	62.100	600
S17	388188.257	396867.644	64.680	2.680	1500			1	16.004	62.160	450
								2	12.009	62.160	300
								3	1.005	62.000	600
							0	1.006	62.000	600
OU-19	388256.281	396929.299	64.800	1.000	350	350				
							0	23.000	63.800	225
S18	388236.014	396932.498	64.560	1.245	1500			1	23.000	63.390	225
							0	23.001	63.315	300
OU-20	388223.207	396917.885	64.507	1.000	350	350				
							0	24.000	63.507	150
OU-21	388239.483	396908.335	64.564	1.000	350	350				
							0	25.000	63.564	225
S19	388230.077	396910.923	64.480	1.330	1500			1	25.000	63.300	225
								2	24.000	63.300	150
								3	23.001	63.225	300
							0	23.002	63.150	300
KO-01	388262.984	396869.222	64.202	0.790	350	350				
							0	26.000	63.412	225
OU-22	388265.455	396876.733	64.496	0.881	350	350				
							0	27.000	63.615	150
S20	388261.407	396877.847	64.730	1.569	1500			1	27.000	63.236	150
								2	26.000	63.237	225
							0	26.001	63.161	225
OU-23	388229.757	396871.909	64.573	1.000	350	350				
							0	13.000	63.573	225

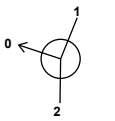
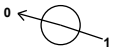
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Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Width (mm)	Connections	Link	IL (m)	Dia (mm)
OU-24	388234.487	396890.122	64.528	1.000	350	350				
							0	28.000	63.528	225
JUN S22A	388229.800	396886.545	64.576	1.634				1	28.000	62.942	225
								2	26.001	62.942	225
								0	26.002	62.942	225
OU-26	388215.721	396889.840	64.279	0.817	350	350				
							0	29.000	63.462	225
OU-25	388211.947	396875.699	64.312	0.805	350	350				
							0	15.000	63.507	150
S22	388213.557	396891.015	64.330	1.729	1500			1	29.000	63.273	225
								2	26.002	62.830	225
								3	23.002	62.751	300
								0	23.003	62.601	450
OU-27	388192.039	396926.186	64.473	1.350	350	350				
							0	30.000	63.123	225
S23	388189.987	396910.486	64.499	1.843	600			1	30.000	62.731	225
								0	30.001	62.656	300
OU-28	388185.887	396903.148	64.457	1.000	350	350				
							0	31.000	63.457	225
JUN-05	388187.729	396902.281	64.483	1.861				1	31.000	62.697	225
								2	30.001	62.622	300
								0	30.002	62.622	300
OU-29	388181.023	396884.928	64.500	1.000	350	350				
							0	32.000	63.500	150
S24	388182.786	396884.320	64.597	2.050	1500			1	32.000	63.481	150
								2	30.002	62.547	300
								0	30.003	62.547	300
OU-30	388203.533	396881.236	64.198	1.350	350	350				
							0	33.000	62.848	150
S25	388191.349	396882.020	64.637	2.730	1500			1	33.000	62.780	150
								2	30.003	62.207	300
								3	23.003	62.207	450
								0	23.004	61.907	600

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Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Width (mm)	Connections	Link	IL (m)	Dia (mm)
S26	388188.359	396874.610	64.660	2.994	1500		 1	23.004	61.666	600
							2	1.006	61.985	600
							0	1.007	61.666	600
PI	388181.875	396876.751	64.577	3.007	600		 1	1.007	61.651	600
							0	1.009	61.570	600
S27	388170.636	396879.830	64.754	3.499	1800		 1	1.009	61.554	600
							0	1.010	61.255	375
TANK	388177.005	396903.633	64.540	3.370			 1	1.010	61.170	375
							0	1.011	61.170	375
S28	388179.853	396906.968	64.536	3.384	1500		 1	1.011	61.161	375
							0	1.012	61.152	300
S29	388191.433	396939.763	64.553	4.003	1800		 1	1.012	60.550	300
JUN S17A	388200.818	396862.879	64.652	2.215			 1	15.000	62.587	150
							2	12.008	62.437	300
							0	12.009	62.437	300

Simulation Settings

Rainfall Methodology	FSR	Analysis Speed	Detailed
FSR Region	England and Wales	Skip Steady State	x
M5-60 (mm)	17.000	Drain Down Time (mins)	240
Ratio-R	0.400	Additional Storage (m³/ha)	20.0
Summer CV	1.000	Check Discharge Rate(s)	x
Winter CV	1.000	Check Discharge Volume	x

Storm Durations

15	30	60	120	180	240	360	480	600	720	960	1440

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
1	0	0	0
30	0	0	0
100	40	0	0

Node S29 Surcharged Outfall

Overrides Design Area	x	Depression Storage Area (m²)	0	Evapo-transpiration (mm/day)	0
Overrides Design Additional Inflow	x	Depression Storage Depth (mm)	0		

Applies to 100yr+40% CC 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440 minute storms

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Time (mins)	Depth (m)	Time (mins)	Depth (m)
0	1.300	1440	1.300

Node S28 Online Hydro-Brake® Control

Flap Valve	✓	Objective	(HE) Minimise upstream storage
Downstream Link	1.012	Sump Available	✓
Replaces Downstream Link	x	Product Number	CTL-SHE-0252-3300-0600-3300
Invert Level (m)	61.152	Min Outlet Diameter (m)	0.300
Design Depth (m)	0.600	Min Node Diameter (mm)	1500
Design Flow (l/s)	33.0		

Node S28 Online Orifice Control

Flap Valve	x	Invert Level (m)	62.170	Discharge Coefficient	0.600
Replaces Downstream Link	x	Diameter (m)	0.190		

Node TANK Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	61.170
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.95	Time to half empty (mins)	124

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	323.0	0.0	2.400	323.0	0.0	2.401	0.0	0.0

Node S13b Link Surround Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Porosity	0.30	Link	12.005
Side Inf Coefficient (m/hr)	0.00000	Invert Level (m)	63.033	Surround Shape	(Trench)
Safety Factor	2.0	Time to half empty (mins)	13	Diameter (mm)	600

Node BEND PP6 Link Surround Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Porosity	0.30	Link	12.004
Side Inf Coefficient (m/hr)	0.00000	Invert Level (m)	63.073	Surround Shape	(Trench)
Safety Factor	2.0	Time to half empty (mins)	12	Diameter (mm)	600

Node BEND PP5 Link Surround Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Porosity	0.30	Link	12.003
Side Inf Coefficient (m/hr)	0.00000	Invert Level (m)	63.190	Surround Shape	(Trench)
Safety Factor	2.0	Time to half empty (mins)	8	Diameter (mm)	600

Node BEND PP4 Link Surround Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Porosity	0.30	Link	12.002
Side Inf Coefficient (m/hr)	0.00000	Invert Level (m)	63.222	Surround Shape	(Trench)
Safety Factor	2.0	Time to half empty (mins)	11	Diameter (mm)	600

Node BEND PP3 Link Surround Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Link	12.001
Side Inf Coefficient (m/hr)	0.00000	Invert Level (m)	63.276	Surround Shape	(Trench)
Safety Factor	2.0	Time to half empty (mins)	8	Diameter (mm)	600

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Node BEND PP2 Link Surround Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Porosity	0.30	Link	12.000
Side Inf Coefficient (m/hr)	0.00000	Invert Level (m)	63.326	Surround Shape	(Trench)
Safety Factor	2.0	Time to half empty (mins)	7	Diameter (mm)	600

Rainfall

Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)	Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)
1 year 15 minute summer	92.521	26.180	30 year 360 minute summer	26.939	6.932
1 year 15 minute winter	64.927	26.180	30 year 360 minute winter	17.511	6.932
1 year 30 minute summer	60.022	16.984	30 year 480 minute summer	20.981	5.545
1 year 30 minute winter	42.121	16.984	30 year 480 minute winter	13.940	5.545
1 year 60 minute summer	40.398	10.676	30 year 600 minute summer	17.039	4.661
1 year 60 minute winter	26.839	10.676	30 year 600 minute winter	11.642	4.661
1 year 120 minute summer	24.980	6.602	30 year 720 minute summer	15.093	4.045
1 year 120 minute winter	16.596	6.602	30 year 720 minute winter	10.143	4.045
1 year 180 minute summer	19.271	4.959	30 year 960 minute summer	12.278	3.233
1 year 180 minute winter	12.527	4.959	30 year 960 minute winter	8.133	3.233
1 year 240 minute summer	15.301	4.043	30 year 1440 minute summer	8.788	2.355
1 year 240 minute winter	10.165	4.043	30 year 1440 minute winter	5.906	2.355
1 year 360 minute summer	11.775	3.030	100 year +40% CC 15 minute summer	408.473	115.584
1 year 360 minute winter	7.654	3.030	100 year +40% CC 15 minute winter	286.647	115.584
1 year 480 minute summer	9.342	2.469	100 year +40% CC 30 minute summer	268.775	76.054
1 year 480 minute winter	6.207	2.469	100 year +40% CC 30 minute winter	188.614	76.054
1 year 600 minute summer	7.682	2.101	100 year +40% CC 60 minute summer	180.954	47.821
1 year 600 minute winter	5.249	2.101	100 year +40% CC 60 minute winter	120.222	47.821
1 year 720 minute summer	6.859	1.838	100 year +40% CC 120 minute summer	110.370	29.168
1 year 720 minute winter	4.609	1.838	100 year +40% CC 120 minute winter	73.327	29.168
1 year 960 minute summer	5.653	1.489	100 year +40% CC 180 minute summer	83.953	21.604
1 year 960 minute winter	3.745	1.489	100 year +40% CC 180 minute winter	54.572	21.604
1 year 1440 minute summer	4.127	1.106	100 year +40% CC 240 minute summer	65.765	17.380
1 year 1440 minute winter	2.773	1.106	100 year +40% CC 240 minute winter	43.693	17.380
30 year 15 minute summer	226.195	64.005	100 year +40% CC 360 minute summer	49.370	12.705
30 year 15 minute winter	158.733	64.005	100 year +40% CC 360 minute winter	32.092	12.705
30 year 30 minute summer	147.452	41.724	100 year +40% CC 480 minute summer	38.291	10.119
30 year 30 minute winter	103.475	41.724	100 year +40% CC 480 minute winter	25.439	10.119
30 year 60 minute summer	98.615	26.061	100 year +40% CC 600 minute summer	30.992	8.477
30 year 60 minute winter	65.517	26.061	100 year +40% CC 600 minute winter	21.176	8.477
30 year 120 minute summer	59.946	15.842	100 year +40% CC 720 minute summer	27.387	7.340
30 year 120 minute winter	39.827	15.842	100 year +40% CC 720 minute winter	18.406	7.340
30 year 180 minute summer	45.598	11.734	100 year +40% CC 960 minute summer	22.191	5.844
30 year 180 minute winter	29.640	11.734	100 year +40% CC 960 minute winter	14.700	5.844
30 year 240 minute summer	35.759	9.450	100 year +40% CC 1440 minute summer	15.789	4.232
30 year 240 minute winter	23.758	9.450	100 year +40% CC 1440 minute winter	10.611	4.232

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Results for 1 year Critical Storm Duration. Lowest mass balance: 99.76%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	RE PP1	10	63.560	0.060	8.2	0.1414	0.0000	OK
15 minute summer	BEND PP2	10	63.395	0.069	10.4	0.0565	0.0000	OK
15 minute summer	BEND PP3	10	63.354	0.078	12.9	0.1488	0.0000	OK
15 minute summer	BEND PP4	10	63.308	0.086	14.3	0.0612	0.0000	OK
15 minute summer	BEND PP5	11	63.286	0.096	19.6	0.1001	0.0000	OK
15 minute summer	BEND PP6	11	63.183	0.110	21.3	0.1003	0.0000	OK
15 minute summer	S13b	11	63.137	0.104	21.4	0.2283	0.0000	OK
15 minute summer	S13a	11	63.020	0.098	21.4	0.0278	0.0000	OK
15 minute summer	OU-11	10	63.879	0.077	12.1	0.1330	0.0000	OK
15 minute summer	S13	11	62.685	0.145	41.8	0.2555	0.0000	OK
15 minute summer	OU-12	10	63.179	0.103	21.2	0.3003	0.0000	OK
15 minute summer	OU-13	10	63.099	0.068	19.0	0.1804	0.0000	OK
15 minute summer	S14	10	62.735	0.154	39.6	0.2724	0.0000	OK
15 minute summer	OU-14	10	63.124	0.041	9.2	0.0553	0.0000	OK
15 minute summer	JUN-02	11	62.694	0.170	48.3	0.0000	0.0000	OK
15 minute summer	OU-15	10	63.310	0.078	13.1	0.1454	0.0000	OK
15 minute summer	S15	10	63.258	0.076	16.0	0.1600	0.0000	OK
15 minute summer	OU-16	10	63.343	0.045	8.2	0.0605	0.0000	OK
15 minute summer	JUN-03	11	62.926	0.096	23.9	0.0000	0.0000	OK
15 minute summer	OU-17	10	63.218	0.082	10.1	0.1198	0.0000	OK
15 minute summer	S16	11	62.640	0.175	82.3	0.3099	0.0000	OK
15 minute summer	OU-18	10	63.634	0.024	3.0	0.0127	0.0000	OK
15 minute summer	JUN-04	11	62.517	0.163	85.5	0.0000	0.0000	OK
15 minute summer	OU-08	11	63.198	0.039	2.6	0.0180	0.0000	OK
15 minute summer	S07	10	63.455	0.025	1.7	0.0125	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	RE PP1	12.000	BEND PP2	8.1	0.859	0.156	0.1643	
15 minute summer	BEND PP2	12.001	BEND PP3	10.3	0.915	0.198	0.0559	
15 minute summer	BEND PP3	12.002	BEND PP4	12.8	0.985	0.247	0.0706	
15 minute summer	BEND PP4	12.003	BEND PP5	14.3	0.952	0.275	0.0479	
15 minute summer	BEND PP5	12.004	BEND PP6	19.6	1.108	0.377	0.2074	
15 minute summer	BEND PP6	12.005	S13b	21.4	1.148	0.412	0.0748	
15 minute summer	S13b	12.006	S13a	21.4	1.240	0.369	0.1535	
15 minute summer	S13a	12.007	S13	21.4	1.325	0.367	0.3957	
15 minute summer	OU-11	14.000	S13	11.9	1.032	0.230	0.1557	
15 minute summer	S13	12.008	JUN S17A	41.9	1.396	0.463	0.4660	
15 minute summer	OU-12	16.000	S14	20.7	1.214	0.399	0.4619	
15 minute summer	OU-13	17.000	S14	18.9	2.068	0.148	0.0346	
15 minute summer	S14	16.001	JUN-02	39.3	0.766	0.228	1.0251	
15 minute summer	OU-14	18.000	JUN-02	9.2	1.919	0.066	0.0176	
15 minute summer	JUN-02	16.002	S16	48.7	0.869	0.283	1.1589	
15 minute summer	OU-15	19.000	S15	13.0	0.914	0.117	0.0719	
15 minute summer	S15	19.001	JUN-03	15.8	0.954	0.142	0.5860	
15 minute summer	OU-16	20.000	JUN-03	8.2	1.879	0.182	0.0219	
15 minute summer	JUN-03	19.002	S16	23.8	1.251	0.214	0.3788	
15 minute summer	OU-17	21.000	S16	10.0	0.822	0.237	0.0589	
15 minute summer	S16	16.003	JUN-04	82.6	1.515	0.303	0.8516	
15 minute summer	OU-18	22.000	JUN-04	3.0	1.634	0.055	0.0187	
15 minute summer	JUN-04	16.004	S17	85.6	1.635	0.261	1.0514	
15 minute summer	OU-08	1.000	S09	2.5	0.710	0.143	0.0820	
15 minute summer	S07	2.000	S08	1.7	0.857	0.060	0.0241	

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Results for 1 year Critical Storm Duration. Lowest mass balance: 99.76%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	OU-01	10	63.431	0.011	0.5	0.0020	0.0000	OK
15 minute summer	S08	11	63.085	0.032	2.1	0.0090	0.0000	OK
15 minute summer	S09	11	62.909	0.054	4.6	0.0962	0.0000	OK
15 minute summer	OU-02	10	63.119	0.056	10.3	0.0833	0.0000	OK
15 minute summer	S01	10	63.028	0.050	10.3	0.0143	0.0000	OK
15 minute summer	OU-07	10	63.039	0.044	6.0	0.0316	0.0000	OK
15 minute summer	S10	11	62.830	0.094	20.6	0.0266	0.0000	OK
15 minute summer	OU-04	10	63.174	0.081	19.6	0.2203	0.0000	OK
15 minute summer	OU-03	10	63.292	0.040	8.3	0.0492	0.0000	OK
15 minute summer	S03	10	63.008	0.060	8.3	0.1064	0.0000	OK
15 minute summer	S04	11	62.535	0.163	47.6	0.2886	0.0000	OK
15 minute summer	OU-05	10	63.471	0.054	9.1	0.0713	0.0000	OK
15 minute summer	OU-06	10	63.621	0.029	4.5	0.0210	0.0000	OK
15 minute summer	S05	11	62.362	0.215	63.1	0.3800	0.0000	OK
15 minute summer	S11	10	63.821	0.021	2.0	0.0106	0.0000	OK
15 minute summer	S12	10	63.997	0.021	2.0	0.0109	0.0000	OK
15 minute summer	S17A	12	62.349	0.249	63.8	0.4405	0.0000	OK
15 minute summer	S17	12	62.341	0.341	198.8	0.6025	0.0000	OK
15 minute summer	OU-19	10	63.864	0.064	12.2	0.1107	0.0000	OK
15 minute summer	S18	11	63.401	0.086	12.1	0.1524	0.0000	OK
15 minute summer	OU-20	10	63.580	0.073	11.0	0.1155	0.0000	OK
15 minute summer	OU-21	10	63.616	0.052	9.1	0.0686	0.0000	OK
15 minute summer	S19	11	63.251	0.101	31.6	0.1788	0.0000	OK
15 minute summer	KO-01	10	63.453	0.041	5.0	0.0396	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	OU-01	3.000	S08	0.5	0.255	0.004	0.0162	
15 minute summer	S08	2.001	S09	2.1	0.630	0.040	0.0252	
15 minute summer	S09	1.001	S10	4.7	0.658	0.117	0.0519	
15 minute summer	OU-02	4.000	S01	10.3	1.216	0.060	0.0309	
15 minute summer	S01	4.001	S10	10.2	0.802	0.062	0.1477	
15 minute summer	OU-07	5.000	S10	6.0	1.563	0.131	0.0065	
15 minute summer	S10	1.002	S04	20.6	1.124	0.201	0.4582	
15 minute summer	OU-04	6.000	S04	19.3	1.548	0.259	0.3016	
15 minute summer	OU-03	7.000	S03	8.3	1.601	0.144	0.0153	
15 minute summer	S03	7.001	S04	8.2	1.277	0.310	0.0807	
15 minute summer	S04	1.003	S05	48.1	0.980	0.259	1.1103	
15 minute summer	OU-05	8.000	S05	9.0	1.257	0.119	0.1434	
15 minute summer	OU-06	10.000	S05	4.5	1.954	0.073	0.0116	
15 minute summer	S05	1.004_1	S17A	61.9	0.821	0.169	1.6468	
15 minute summer	S11	1.004	S05	2.0	1.393	0.038	0.0136	
15 minute summer	S12	11.000	S17A	2.0	1.365	0.040	0.0284	
15 minute summer	S17A	1.005	S17	63.4	0.481	0.166	4.4557	
15 minute summer	S17	1.006	S26	197.4	1.322	0.612	1.0403	
15 minute summer	OU-19	23.000	S18	12.1	1.347	0.164	0.1838	
15 minute summer	S18	23.001	S19	12.0	0.740	0.172	0.3632	
15 minute summer	OU-20	24.000	S19	10.9	1.343	0.420	0.0794	
15 minute summer	OU-21	25.000	S19	9.0	1.360	0.105	0.0647	
15 minute summer	S19	23.002	S22	31.6	1.561	0.229	0.5236	
15 minute summer	KO-01	26.000	S20	5.0	1.030	0.067	0.0423	

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Results for 1 year Critical Storm Duration. Lowest mass balance: 99.76%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	OU-22	10	63.655	0.040	7.1	0.0477	0.0000	OK
15 minute summer	S20	10	63.242	0.081	12.0	0.1425	0.0000	OK
15 minute summer	OU-23	10	63.638	0.065	9.1	0.0861	0.0000	OK
15 minute summer	OU-24	10	63.564	0.036	9.1	0.0473	0.0000	OK
15 minute summer	JUN S22A	11	63.056	0.114	20.9	0.0000	0.0000	OK
15 minute summer	OU-26	10	63.511	0.049	11.0	0.0935	0.0000	OK
15 minute summer	OU-25	10	63.560	0.053	11.0	0.1034	0.0000	OK
15 minute summer	S22	11	62.726	0.125	62.9	0.2203	0.0000	OK
15 minute summer	OU-27	10	63.187	0.064	13.6	0.0936	0.0000	OK
15 minute summer	S23	10	62.765	0.109	13.5	0.0308	0.0000	OK
15 minute summer	OU-28	10	63.493	0.036	17.8	0.0892	0.0000	OK
15 minute summer	JUN-05	10	62.759	0.137	31.1	0.0000	0.0000	OK
15 minute summer	OU-29	10	63.589	0.089	9.2	0.1195	0.0000	OK
15 minute summer	S24	10	62.644	0.097	40.0	0.1707	0.0000	OK
15 minute summer	OU-30	10	62.936	0.088	7.9	0.0782	0.0000	OK
15 minute summer	S25	11	62.064	0.157	110.6	0.2780	0.0000	OK
15 minute summer	S26	11	62.104	0.438	305.3	0.7734	0.0000	OK
15 minute summer	PI	11	62.002	0.432	304.0	0.1222	0.0000	OK
120 minute summer	S27	86	61.693	0.438	139.0	1.1152	0.0000	SURCHARGED
120 minute summer	TANK	86	61.693	0.523	134.8	160.3819	0.0000	SURCHARGED
120 minute summer	S28	86	61.691	0.539	33.4	0.9523	0.0000	SURCHARGED
30 minute summer	S29	33	60.648	0.098	32.9	0.0000	0.0000	OK
15 minute summer	JUN S17A	11	62.558	0.121	52.5	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	OU-22	27.000	S20	7.1	1.986	0.131	0.0150	
15 minute summer	S20	26.001	JUN S22A	11.8	0.728	0.279	0.5387	
15 minute summer	OU-23	13.000	S13	8.9	0.964	0.172	0.1881	
15 minute summer	OU-24	28.000	JUN S22A	9.1	1.233	0.055	0.0708	
15 minute summer	JUN S22A	26.002	S22	20.7	1.051	0.489	0.3321	
15 minute summer	OU-26	29.000	S22	10.9	1.922	0.076	0.0141	
15 minute summer	OU-25	15.000	JUN S17A	10.9	1.965	0.262	0.0942	
15 minute summer	S22	23.003	S25	63.2	1.849	0.152	0.8192	
15 minute summer	OU-27	30.000	S23	13.5	1.490	0.164	0.1433	
15 minute summer	S23	30.001	JUN-05	13.4	0.496	0.191	0.2313	
15 minute summer	OU-28	31.000	JUN-05	17.8	3.415	0.055	0.0131	
15 minute summer	JUN-05	30.002	S24	30.9	1.221	0.442	0.4735	
15 minute summer	OU-29	32.000	S24	9.1	0.923	0.515	0.0184	
15 minute summer	S24	30.003	S25	39.7	2.200	0.182	0.1606	
15 minute summer	OU-30	33.000	S25	7.8	0.762	0.588	0.1244	
15 minute summer	S25	23.004	S26	109.8	0.992	0.092	1.1149	
15 minute summer	S26	1.007	PI	304.0	1.528	0.942	1.3548	
15 minute summer	PI	1.009	S27	303.2	1.540	0.815	1.0683	
120 minute summer	S27	1.010	TANK	134.8	1.068	0.356	6.9967	
120 minute summer	TANK	1.011	S28	33.4	0.319	0.277	0.2704	
120 minute summer	S28	1.012	S29	32.9	1.614	0.234	0.7673	267.4
15 minute summer	JUN S17A	12.009	S17	52.6	1.814	0.329	0.4748	

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Results for 30 year Critical Storm Duration. Lowest mass balance: 99.76%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	RE PP1	10	63.599	0.099	19.9	0.2323	0.0000	OK
15 minute summer	BEND PP2	10	63.447	0.121	25.2	0.1345	0.0000	OK
15 minute summer	BEND PP3	12	63.417	0.141	31.2	0.2974	0.0000	OK
15 minute summer	BEND PP4	12	63.414	0.192	34.6	0.1498	0.0000	OK
15 minute summer	BEND PP5	12	63.411	0.221	47.6	0.2348	0.0000	OK
15 minute summer	BEND PP6	12	63.341	0.268	51.6	0.3781	0.0000	SURCHARGED
15 minute summer	S13b	12	63.295	0.262	50.5	0.5903	0.0000	SURCHARGED
15 minute summer	S13a	12	63.195	0.273	49.5	0.0772	0.0000	SURCHARGED
15 minute summer	OU-11	10	63.933	0.131	29.6	0.2264	0.0000	OK
15 minute summer	S13	11	62.982	0.442	99.8	0.7813	0.0000	SURCHARGED
15 minute summer	OU-12	10	63.270	0.194	51.7	0.5675	0.0000	OK
15 minute summer	OU-13	10	63.151	0.120	46.5	0.3164	0.0000	OK
15 minute summer	S14	11	62.860	0.279	96.5	0.4933	0.0000	OK
15 minute summer	OU-14	10	63.149	0.066	22.5	0.0892	0.0000	OK
15 minute summer	JUN-02	11	62.830	0.306	117.3	0.0000	0.0000	OK
15 minute summer	OU-15	10	63.363	0.131	32.1	0.2439	0.0000	OK
15 minute summer	S15	10	63.304	0.122	39.4	0.2583	0.0000	OK
15 minute summer	OU-16	10	63.373	0.075	19.9	0.1004	0.0000	OK
15 minute summer	JUN-03	10	62.990	0.160	58.8	0.0000	0.0000	OK
15 minute summer	OU-17	10	63.275	0.139	24.8	0.2032	0.0000	OK
15 minute summer	S16	12	62.796	0.331	198.1	0.5844	0.0000	OK
15 minute summer	OU-18	10	63.648	0.038	7.4	0.0200	0.0000	OK
15 minute summer	JUN-04	12	62.732	0.378	201.6	0.0000	0.0000	OK
15 minute summer	OU-08	10	63.222	0.063	6.3	0.0290	0.0000	OK
15 minute summer	S07	10	63.470	0.040	4.1	0.0197	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	RE PP1	12.000	BEND PP2	19.7	1.022	0.379	0.3356	
15 minute summer	BEND PP2	12.001	BEND PP3	24.9	1.047	0.479	0.1181	
15 minute summer	BEND PP3	12.002	BEND PP4	31.0	1.106	0.596	0.1686	
15 minute summer	BEND PP4	12.003	BEND PP5	34.5	1.075	0.664	0.1206	
15 minute summer	BEND PP5	12.004	BEND PP6	47.2	1.291	0.909	0.4645	
15 minute summer	BEND PP6	12.005	S13b	50.5	1.346	0.971	0.1595	
15 minute summer	S13b	12.006	S13a	49.5	1.446	0.851	0.3529	
15 minute summer	S13a	12.007	S13	51.0	1.512	0.877	0.9758	
15 minute summer	OU-11	14.000	S13	29.3	1.286	0.563	0.3063	
15 minute summer	S13	12.008	JUN S17A	93.0	1.522	1.027	1.0927	
15 minute summer	OU-12	16.000	S14	50.4	1.447	0.969	0.9395	
15 minute summer	OU-13	17.000	S14	46.3	2.503	0.363	0.0700	
15 minute summer	S14	16.001	JUN-02	95.2	0.890	0.554	2.1783	
15 minute summer	OU-14	18.000	JUN-02	22.4	2.436	0.162	0.0338	
15 minute summer	JUN-02	16.002	S16	116.1	1.012	0.676	2.4661	
15 minute summer	OU-15	19.000	S15	32.0	1.132	0.288	0.1426	
15 minute summer	S15	19.001	JUN-03	39.0	1.198	0.351	1.1469	
15 minute summer	OU-16	20.000	JUN-03	19.8	2.353	0.441	0.0424	
15 minute summer	JUN-03	19.002	S16	58.2	1.565	0.523	0.7614	
15 minute summer	OU-17	21.000	S16	24.6	1.031	0.581	0.1152	
15 minute summer	S16	16.003	JUN-04	194.3	1.714	0.714	2.0864	
15 minute summer	OU-18	22.000	JUN-04	7.4	2.117	0.136	0.0457	
15 minute summer	JUN-04	16.004	S17	198.2	1.645	0.605	2.8430	
15 minute summer	OU-08	1.000	S09	6.2	0.902	0.347	0.1567	
15 minute summer	S07	2.000	S08	4.1	1.103	0.146	0.0456	

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Results for 30 year Critical Storm Duration. Lowest mass balance: 99.76%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	OU-01	11	63.436	0.016	1.1	0.0029	0.0000	OK
15 minute summer	S08	10	63.103	0.050	5.2	0.0142	0.0000	OK
15 minute summer	S09	11	62.943	0.088	11.3	0.1555	0.0000	OK
15 minute summer	OU-02	10	63.156	0.093	25.1	0.1378	0.0000	OK
15 minute summer	S01	10	63.060	0.082	25.0	0.0233	0.0000	OK
15 minute summer	OU-07	10	63.073	0.078	14.8	0.0556	0.0000	OK
15 minute summer	S10	11	62.894	0.158	50.8	0.0446	0.0000	OK
15 minute summer	OU-04	10	63.232	0.139	48.0	0.3788	0.0000	OK
15 minute summer	OU-03	10	63.323	0.071	20.3	0.0863	0.0000	OK
15 minute summer	S03	10	63.055	0.107	20.2	0.1896	0.0000	OK
15 minute summer	S04	12	62.737	0.365	117.2	0.6456	0.0000	OK
15 minute summer	OU-05	10	63.504	0.087	22.2	0.1155	0.0000	OK
15 minute summer	OU-06	10	63.639	0.047	11.1	0.0342	0.0000	OK
15 minute summer	S05	12	62.707	0.560	151.0	0.9900	0.0000	OK
15 minute summer	S11	10	63.832	0.032	4.8	0.0164	0.0000	OK
15 minute summer	S12	10	64.007	0.031	4.8	0.0166	0.0000	OK
15 minute summer	S17A	12	62.695	0.595	149.2	1.0521	0.0000	OK
15 minute summer	S17	12	62.672	0.672	457.7	1.1880	0.0000	SURCHARGED
15 minute summer	OU-19	10	63.905	0.105	29.9	0.1827	0.0000	OK
15 minute summer	S18	10	63.457	0.142	29.6	0.2500	0.0000	OK
15 minute summer	OU-20	11	63.714	0.207	27.0	0.3267	0.0000	SURCHARGED
15 minute summer	OU-21	10	63.649	0.085	22.2	0.1122	0.0000	OK
15 minute summer	S19	11	63.322	0.172	76.6	0.3036	0.0000	OK
15 minute summer	KO-01	10	63.478	0.066	12.2	0.0635	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	OU-01	3.000	S08	1.1	0.315	0.010	0.0310	
15 minute summer	S08	2.001	S09	5.1	0.807	0.098	0.0477	
15 minute summer	S09	1.001	S10	11.3	0.819	0.281	0.1007	
15 minute summer	OU-02	4.000	S01	25.0	1.465	0.147	0.0625	
15 minute summer	S01	4.001	S10	24.9	0.963	0.152	0.2949	
15 minute summer	OU-07	5.000	S10	14.7	1.891	0.324	0.0132	
15 minute summer	S10	1.002	S04	49.9	1.400	0.486	1.0885	
15 minute summer	OU-04	6.000	S04	47.4	1.922	0.635	0.5963	
15 minute summer	OU-03	7.000	S03	20.2	1.876	0.352	0.0319	
15 minute summer	S03	7.001	S04	20.0	1.561	0.759	0.1617	
15 minute summer	S04	1.003	S05	113.2	1.175	0.609	3.2734	
15 minute summer	OU-05	8.000	S05	22.0	1.599	0.293	0.2763	
15 minute summer	OU-06	10.000	S05	11.1	2.478	0.180	0.0226	
15 minute summer	S05	1.004_1	S17A	145.3	0.792	0.397	4.5448	
15 minute summer	S11	1.004	S05	4.8	1.792	0.092	0.0255	
15 minute summer	S12	11.000	S17A	4.8	1.728	0.096	0.1985	
15 minute summer	S17A	1.005	S17	152.5	0.580	0.400	9.0915	
15 minute summer	S17	1.006	S26	458.9	1.656	1.422	1.9583	
15 minute summer	OU-19	23.000	S18	29.6	1.699	0.401	0.3573	
15 minute summer	S18	23.001	S19	29.4	0.944	0.420	0.6964	
15 minute summer	OU-20	24.000	S19	26.0	1.538	1.005	0.1697	
15 minute summer	OU-21	25.000	S19	22.1	1.714	0.257	0.1256	
15 minute summer	S19	23.002	S22	77.2	1.943	0.559	1.0279	
15 minute summer	KO-01	26.000	S20	12.1	1.310	0.164	0.0811	

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Results for 30 year Critical Storm Duration. Lowest mass balance: 99.76%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	OU-22	10	63.683	0.068	17.4	0.0804	0.0000	OK
15 minute summer	S20	10	63.296	0.135	29.5	0.2391	0.0000	OK
15 minute summer	OU-23	10	63.680	0.107	22.2	0.1421	0.0000	OK
15 minute summer	OU-24	10	63.584	0.056	22.2	0.0734	0.0000	OK
15 minute summer	JUN S22A	11	63.195	0.253	51.2	0.0000	0.0000	SURCHARGED
15 minute summer	OU-26	10	63.546	0.084	27.0	0.1605	0.0000	OK
15 minute summer	OU-25	10	63.595	0.088	27.0	0.1705	0.0000	OK
15 minute summer	S22	10	62.806	0.205	153.5	0.3627	0.0000	OK
15 minute summer	OU-27	10	63.226	0.103	33.2	0.1500	0.0000	OK
15 minute summer	S23	10	62.866	0.210	33.1	0.0593	0.0000	OK
15 minute summer	OU-28	10	63.515	0.058	43.6	0.1434	0.0000	OK
15 minute summer	JUN-05	10	62.856	0.234	76.1	0.0000	0.0000	OK
15 minute summer	OU-29	10	63.695	0.195	22.5	0.2613	0.0000	SURCHARGED
15 minute summer	S24	11	62.733	0.186	97.5	0.3282	0.0000	OK
15 minute summer	OU-30	10	63.071	0.223	19.2	0.1994	0.0000	SURCHARGED
15 minute summer	S25	11	62.607	0.700	269.2	1.2367	0.0000	SURCHARGED
15 minute summer	S26	12	62.574	0.908	707.1	1.6047	0.0000	SURCHARGED
120 minute summer	PI	84	62.472	0.902	330.9	0.2552	0.0000	SURCHARGED
120 minute summer	S27	84	62.469	1.214	329.0	3.0893	0.0000	SURCHARGED
120 minute summer	TANK	84	62.464	1.294	325.7	397.1321	0.0000	SURCHARGED
120 minute summer	S28	84	62.454	1.302	77.6	2.3009	0.0000	SURCHARGED
120 minute summer	S29	84	60.707	0.157	77.6	0.0000	0.0000	OK
15 minute summer	JUN S17A	11	62.852	0.415	120.0	0.0000	0.0000	SURCHARGED

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	OU-22	27.000	S20	17.4	2.427	0.323	0.0301	
15 minute summer	S20	26.001	JUN S22A	29.1	0.868	0.687	1.0606	
15 minute summer	OU-23	13.000	S13	21.9	1.218	0.421	0.3655	
15 minute summer	OU-24	28.000	JUN S22A	22.2	1.394	0.134	0.1396	
15 minute summer	JUN S22A	26.002	S22	50.5	1.284	1.192	0.6320	
15 minute summer	OU-26	29.000	S22	26.9	2.338	0.186	0.0284	
15 minute summer	OU-25	15.000	JUN S17A	27.0	2.414	0.649	0.2375	
15 minute summer	S22	23.003	S25	155.1	2.187	0.374	2.5660	
15 minute summer	OU-27	30.000	S23	33.1	1.705	0.403	0.3363	
15 minute summer	S23	30.001	JUN-05	32.5	0.582	0.465	0.4748	
15 minute summer	OU-28	31.000	JUN-05	43.5	3.488	0.136	0.0388	
15 minute summer	JUN-05	30.002	S24	75.2	1.472	1.074	0.9737	
15 minute summer	OU-29	32.000	S24	22.3	1.269	1.258	0.0319	
15 minute summer	S24	30.003	S25	96.3	2.425	0.441	0.5153	
15 minute summer	OU-30	33.000	S25	18.8	1.076	1.423	0.2038	
15 minute summer	S25	23.004	S26	267.1	1.042	0.223	2.2509	
15 minute summer	S26	1.007	PI	708.2	2.514	2.195	1.9233	
120 minute summer	PI	1.009	S27	329.0	1.487	0.884	1.5301	
120 minute summer	S27	1.010	TANK	325.7	1.360	0.859	6.9967	
120 minute summer	TANK	1.011	S28	77.6	0.704	0.643	0.2704	
120 minute summer	S28	1.012	S29	77.6	2.000	0.551	1.4585	645.0
15 minute summer	JUN S17A	12.009	S17	116.1	1.818	0.726	0.9460	

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Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 99.76%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	RE PP1	12	64.228	0.728	36.0	1.7101	0.3320	FLOOD
15 minute summer	BEND PP2	12	64.190	0.864	41.0	2.5264	0.1277	FLOOD
15 minute summer	BEND PP3	12	64.173	0.897	41.2	2.7394	3.1239	FLOOD
30 minute summer	BEND PP4	20	64.174	0.952	36.9	1.0294	0.0000	FLOOD RISK
15 minute summer	BEND PP5	12	64.175	0.985	57.3	1.2018	0.0000	FLOOD RISK
30 minute summer	BEND PP6	20	64.146	1.073	54.5	2.2226	0.0000	FLOOD RISK
30 minute summer	S13b	20	64.123	1.090	51.1	2.6511	0.0000	FLOOD RISK
30 minute summer	S13a	20	64.074	1.152	48.4	0.3260	0.0000	SURCHARGED
15 minute summer	OU-11	12	64.058	0.256	53.4	0.4401	0.0000	SURCHARGED
30 minute summer	S13	20	63.963	1.423	107.3	2.5150	0.0000	SURCHARGED
15 minute summer	OU-12	10	64.076	1.000	93.4	2.9230	6.3218	FLOOD
15 minute summer	OU-13	12	64.031	1.000	84.1	2.6420	0.0596	FLOOD
30 minute summer	S14	20	63.917	1.336	131.7	2.3605	0.0000	FLOOD RISK
30 minute summer	OU-14	20	63.913	0.830	36.7	1.1151	0.0000	FLOOD RISK
30 minute summer	JUN-02	20	63.898	1.374	156.9	0.0000	0.0000	FLOOD RISK
15 minute summer	OU-15	12	64.080	0.848	58.0	1.5795	0.0000	FLOOD RISK
15 minute summer	S15	12	64.062	0.880	67.3	1.8585	0.0000	FLOOD RISK
15 minute summer	OU-16	12	64.133	0.835	36.0	1.1145	0.0000	FLOOD RISK
15 minute summer	JUN-03	12	63.967	1.137	101.7	0.0000	0.0000	SURCHARGED
30 minute summer	OU-17	20	63.894	0.758	40.3	1.1092	0.0000	FLOOD RISK
30 minute summer	S16	20	63.865	1.400	255.4	2.4738	0.0000	SURCHARGED
30 minute summer	OU-18	20	63.799	0.189	12.0	0.0991	0.0000	SURCHARGED
30 minute summer	JUN-04	20	63.770	1.416	243.7	0.0000	0.0000	SURCHARGED
30 minute summer	OU-08	21	63.869	0.710	10.2	0.3282	0.0000	FLOOD RISK
30 minute summer	S07	21	63.850	0.420	6.6	0.2071	0.0000	SURCHARGED

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	RE PP1	12.000	BEND PP2	31.5	1.081	0.607	0.6921	
15 minute summer	BEND PP2	12.001	BEND PP3	30.4	1.079	0.585	0.1975	
15 minute summer	BEND PP3	12.002	BEND PP4	36.1	1.103	0.694	0.2150	
30 minute summer	BEND PP4	12.003	BEND PP5	35.5	1.059	0.683	0.1267	
15 minute summer	BEND PP5	12.004	BEND PP6	52.9	1.338	1.018	0.4658	
30 minute summer	BEND PP6	12.005	S13b	51.1	1.369	0.983	0.1595	
30 minute summer	S13b	12.006	S13a	48.4	1.449	0.833	0.3529	
30 minute summer	S13a	12.007	S13	48.5	1.395	0.834	0.9758	
15 minute summer	OU-11	14.000	S13	51.6	1.401	0.993	0.5353	
30 minute summer	S13	12.008	JUN S17A	98.2	1.462	1.084	1.0927	
15 minute summer	OU-12	16.000	S14	66.1	1.663	1.273	1.0733	
15 minute summer	OU-13	17.000	S14	71.2	2.637	0.558	0.1504	
30 minute summer	S14	16.001	JUN-02	123.8	0.914	0.721	3.1667	
30 minute summer	OU-14	18.000	JUN-02	33.1	2.631	0.238	0.1460	
30 minute summer	JUN-02	16.002	S16	144.8	1.009	0.843	3.2804	
15 minute summer	OU-15	19.000	S15	54.6	1.264	0.491	0.3555	
15 minute summer	S15	19.001	JUN-03	67.7	1.261	0.609	2.4808	
15 minute summer	OU-16	20.000	JUN-03	34.0	2.511	0.757	0.0887	
15 minute summer	JUN-03	19.002	S16	81.5	1.569	0.733	1.4005	
30 minute summer	OU-17	21.000	S16	35.9	1.102	0.848	0.1921	
30 minute summer	S16	16.003	JUN-04	234.7	1.710	0.862	2.4755	
30 minute summer	OU-18	22.000	JUN-04	11.9	2.204	0.221	0.1800	
30 minute summer	JUN-04	16.004	S17	241.0	1.599	0.736	2.9965	
30 minute summer	OU-08	1.000	S09	10.1	0.973	0.570	0.4036	
30 minute summer	S07	2.000	S08	6.5	1.208	0.235	0.2184	

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Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 99.76%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
30 minute summer	OU-01	21	63.839	0.419	5.4	0.0766	0.0000	SURCHARGED
30 minute summer	S08	20	63.838	0.785	13.2	0.2222	0.0000	SURCHARGED
30 minute summer	S09	21	63.835	0.980	17.9	1.7317	0.0000	SURCHARGED
30 minute summer	OU-02	21	63.835	0.772	40.9	1.1455	0.0000	FLOOD RISK
30 minute summer	S01	21	63.832	0.854	38.2	0.2415	0.0000	FLOOD RISK
30 minute summer	OU-07	20	63.859	0.864	24.1	0.6176	0.0000	SURCHARGED
30 minute summer	S10	21	63.824	1.088	72.3	0.3080	0.0000	SURCHARGED
15 minute summer	OU-04	11	64.093	1.000	86.7	2.7230	1.0705	FLOOD
15 minute summer	OU-03	12	64.119	0.867	36.7	1.0607	0.0000	FLOOD RISK
30 minute summer	S03	20	63.995	1.047	29.3	1.8504	0.0000	FLOOD RISK
30 minute summer	S04	20	63.749	1.377	159.0	2.4339	0.0000	SURCHARGED
30 minute summer	OU-05	20	63.755	0.338	36.1	0.4466	0.0000	SURCHARGED
30 minute summer	OU-06	21	63.726	0.134	18.1	0.0968	0.0000	OK
30 minute summer	S05	21	63.700	1.553	177.5	2.7433	0.0000	SURCHARGED
15 minute summer	S11	9	63.842	0.042	8.7	0.0217	0.0000	OK
15 minute summer	S12	10	64.018	0.042	8.7	0.0225	0.0000	OK
30 minute summer	S17A	21	63.683	1.583	175.0	2.7967	0.0000	SURCHARGED
30 minute summer	S17	21	63.656	1.656	524.1	2.9253	0.0000	SURCHARGED
15 minute summer	OU-19	12	64.129	0.329	54.0	0.5735	0.0000	SURCHARGED
15 minute summer	S18	12	63.965	0.650	53.6	1.1488	0.0000	SURCHARGED
15 minute summer	OU-20	11	64.507	1.000	48.7	1.5820	0.3582	FLOOD
15 minute summer	OU-21	12	63.973	0.409	40.0	0.5413	0.0000	SURCHARGED
30 minute summer	S19	20	63.930	0.780	122.7	1.3778	0.0000	SURCHARGED
15 minute summer	KO-01	12	64.167	0.755	22.0	0.7232	0.0000	FLOOD RISK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
30 minute summer	OU-01	3.000	S08	4.2	0.338	0.038	0.3159	
30 minute summer	S08	2.001	S09	13.2	0.870	0.255	0.2999	
30 minute summer	S09	1.001	S10	21.7	0.761	0.540	0.2904	
30 minute summer	OU-02	4.000	S01	38.2	1.579	0.225	0.2573	
30 minute summer	S01	4.001	S10	36.1	1.032	0.220	0.7854	
30 minute summer	OU-07	5.000	S10	21.7	2.029	0.478	0.0297	
30 minute summer	S10	1.002	S04	69.8	1.391	0.679	1.7592	
15 minute summer	OU-04	6.000	S04	71.7	1.978	0.960	0.9613	
15 minute summer	OU-03	7.000	S03	30.7	1.968	0.534	0.0519	
30 minute summer	S03	7.001	S04	22.5	1.571	0.853	0.2222	
30 minute summer	S04	1.003	S05	127.0	1.173	0.684	3.5830	
30 minute summer	OU-05	8.000	S05	35.7	1.740	0.476	0.7996	
30 minute summer	OU-06	10.000	S05	18.2	2.714	0.296	0.0863	
30 minute summer	S05	1.004_1	S17A	169.1	0.775	0.462	4.6122	
15 minute summer	S11	1.004	S05	8.7	2.071	0.168	0.1034	
15 minute summer	S12	11.000	S17A	8.7	1.656	0.174	0.2129	
30 minute summer	S17A	1.005	S17	172.9	0.614	0.453	9.0970	
30 minute summer	S17	1.006	S26	520.1	1.847	1.612	1.9624	
15 minute summer	OU-19	23.000	S18	53.6	1.895	0.727	0.8160	
15 minute summer	S18	23.001	S19	46.1	1.055	0.660	1.5758	
15 minute summer	OU-20	24.000	S19	41.4	2.353	1.597	0.1722	
15 minute summer	OU-21	25.000	S19	39.6	1.933	0.462	0.3880	
30 minute summer	S19	23.002	S22	104.4	2.023	0.756	1.8217	
15 minute summer	KO-01	26.000	S20	18.1	1.289	0.245	0.3487	

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Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 99.76%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	OU-22	12	64.281	0.666	31.4	0.7917	0.0000	FLOOD RISK
15 minute summer	S20	12	64.154	0.993	44.1	1.7553	0.0000	SURCHARGED
15 minute summer	OU-23	12	64.030	0.457	40.0	0.6044	0.0000	SURCHARGED
15 minute summer	OU-24	12	63.984	0.456	40.0	0.6035	0.0000	SURCHARGED
15 minute summer	JUN S22A	12	63.957	1.015	73.5	0.0000	0.0000	SURCHARGED
30 minute summer	OU-26	20	63.714	0.252	44.0	0.4816	0.0000	SURCHARGED
15 minute summer	OU-25	11	64.312	0.805	48.7	1.5585	1.3775	FLOOD
30 minute summer	S22	20	63.690	1.089	208.2	1.9245	0.0000	SURCHARGED
15 minute summer	OU-27	12	64.142	1.019	60.0	1.4834	0.0000	SURCHARGED
15 minute summer	S23	12	63.968	1.312	52.4	0.3712	0.0000	SURCHARGED
15 minute summer	OU-28	12	64.006	0.549	78.7	1.3637	0.0000	SURCHARGED
15 minute summer	JUN-05	12	63.946	1.324	116.3	0.0000	0.0000	SURCHARGED
15 minute summer	OU-29	12	63.876	0.376	40.7	0.5050	0.0000	SURCHARGED
30 minute summer	S24	20	63.764	1.217	138.3	2.1496	0.0000	SURCHARGED
15 minute summer	OU-30	12	63.860	1.012	34.7	0.9041	0.0000	SURCHARGED
30 minute summer	S25	21	63.585	1.678	353.3	2.9652	0.0000	SURCHARGED
180 minute summer	S26	120	63.586	1.920	385.3	3.3931	0.0000	SURCHARGED
180 minute summer	PI	120	63.577	2.007	383.7	0.5680	0.0000	SURCHARGED
180 minute summer	S27	120	63.569	2.314	382.9	5.8885	0.0000	SURCHARGED
180 minute summer	TANK	120	63.557	2.387	380.7	732.5635	0.0000	SURCHARGED
180 minute summer	S28	120	63.532	2.380	124.0	4.2048	0.0000	SURCHARGED
15 minute summer	S29	1	61.850	1.300	86.7	0.0000	0.0000	OK
30 minute summer	JUN S17A	20	63.838	1.401	130.7	0.0000	0.0000	SURCHARGED

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	OU-22	27.000	S20	28.9	2.399	0.536	0.0739	
15 minute summer	S20	26.001	JUN S22A	38.0	0.957	0.898	1.3038	
15 minute summer	OU-23	13.000	S13	40.1	1.356	0.771	0.8083	
15 minute summer	OU-24	28.000	JUN S22A	37.5	1.446	0.227	0.2345	
15 minute summer	JUN S22A	26.002	S22	68.9	1.732	1.627	0.6700	
30 minute summer	OU-26	29.000	S22	44.1	2.567	0.304	0.0979	
15 minute summer	OU-25	15.000	JUN S17A	35.9	2.567	0.863	0.2989	
30 minute summer	S22	23.003	S25	208.0	2.101	0.501	3.7963	
15 minute summer	OU-27	30.000	S23	52.4	1.688	0.639	0.6297	
15 minute summer	S23	30.001	JUN-05	48.9	0.694	0.699	0.5993	
15 minute summer	OU-28	31.000	JUN-05	72.3	3.537	0.226	0.0810	
15 minute summer	JUN-05	30.002	S24	112.4	1.596	1.607	1.3118	
15 minute summer	OU-29	32.000	S24	40.2	2.282	2.263	0.0328	
30 minute summer	S24	30.003	S25	132.2	2.523	0.605	0.6244	
15 minute summer	OU-30	33.000	S25	30.2	1.718	2.293	0.2149	
30 minute summer	S25	23.004	S26	344.6	1.223	0.288	2.2509	
180 minute summer	S26	1.007	PI	383.7	1.362	1.189	1.9233	
180 minute summer	PI	1.009	S27	382.9	1.359	1.029	1.5301	
180 minute summer	S27	1.010	TANK	380.7	1.380	1.004	6.9967	
180 minute summer	TANK	1.011	S28	124.0	1.125	1.028	0.2704	
180 minute summer	S28	1.012	S29	124.0	1.761	0.880	2.6469	1136.5
30 minute summer	JUN S17A	12.009	S17	125.2	1.778	0.783	0.9460	

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Design Settings

Rainfall Methodology	FSR	Maximum Time of Concentration (mins)	30.00
Return Period (years)	2	Maximum Rainfall (mm/hr)	50.0
Additional Flow (%)	0	Minimum Velocity (m/s)	1.00
FSR Region	England and Wales	Connection Type	Level Soffits
M5-60 (mm)	18.000	Minimum Backdrop Height (m)	0.200
Ratio-R	0.357	Preferred Cover Depth (m)	1.200
CV	1.000	Include Intermediate Ground	✓
Time of Entry (mins)	5.00	Enforce best practice design rules	✓

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Width (mm)	Easting (m)	Northing (m)	Depth (m)
OU 1	0.032	5.00	64.593	2100	730	388249.214	396884.491	0.207
OU 2	0.055	5.00	64.605	2100	730	388265.693	396880.247	0.300
W01			64.585	1500		388247.363	396874.788	1.415
W02			64.493	1500		388245.187	396866.635	1.457
W03		5.00	64.615	600		388251.742	396874.443	1.775
TANK			64.530			388248.130	396860.913	1.750
W04			64.528	600		388247.600	396858.925	1.756
W05			64.496	1200		388239.060	396855.502	1.767
W06			64.461	1200		388238.179	396852.455	1.967
EX BS4			64.375	1200		388237.159	396848.964	2.245

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
4.000	OU 1	W01	5.241	0.600	64.386	64.128	0.258	20.3	150	5.04	50.0
5.000	OU 2	W01	8.834	0.600	64.305	63.863	0.442	20.0	150	5.07	50.0
4.001	W01	W02	8.438	0.600	63.170	63.036	0.134	63.0	225	5.15	50.0
4.002	W02	W05	12.708	0.600	63.036	62.886	0.150	84.7	225	5.30	50.0
6.000	W03	TANK	14.004	0.600	62.840	62.784	0.056	250.1	300	5.24	50.0
6.001	TANK	W04	2.057	0.600	62.780	62.772	0.008	257.1	300	5.27	50.0
6.002	W04	W05	9.200	0.600	62.772	62.735	0.037	248.6	300	5.43	50.0
4.003	W05	W06	3.172	0.600	62.729	62.494	0.235	13.5	150	5.44	50.0
4.004	W06	EX BS4	3.637	0.600	62.494	62.130	0.364	10.0	150	5.46	50.0

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)
4.000	2.244	39.7	5.8	0.057	0.307	0.032	0.0
5.000	2.262	40.0	9.9	0.150	0.572	0.055	0.0
4.001	1.651	65.6	15.7	1.190	1.232	0.087	0.0
4.002	1.421	56.5	15.7	1.232	1.385	0.087	0.0
6.000	0.989	69.9	0.0	1.475	1.446	0.000	0.0
6.001	0.976	69.0	0.0	1.450	1.456	0.000	0.0
6.002	0.992	70.1	0.0	1.456	1.461	0.000	0.0
4.003	2.756	48.7	15.7	1.617	1.817	0.087	0.0
4.004	3.206	56.6	15.7	1.817	2.095	0.087	0.0

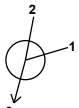
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Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
4.000	5.241	20.3	150	1 STANDARD	64.593	64.386	0.057	64.585	64.128	0.307
5.000	8.834	20.0	150	1 STANDARD	64.605	64.305	0.150	64.585	63.863	0.572
4.001	8.438	63.0	225	1 STANDARD	64.585	63.170	1.190	64.493	63.036	1.232
4.002	12.708	84.7	225	1 STANDARD	64.493	63.036	1.232	64.496	62.886	1.385
6.000	14.004	250.1	300	1 STANDARD	64.615	62.840	1.475	64.530	62.784	1.446
6.001	2.057	257.1	300	1 STANDARD	64.530	62.780	1.450	64.528	62.772	1.456
6.002	9.200	248.6	300	1 STANDARD	64.528	62.772	1.456	64.496	62.735	1.461
4.003	3.172	13.5	150	1 STANDARD	64.496	62.729	1.617	64.461	62.494	1.817
4.004	3.637	10.0	150	1 STANDARD	64.461	62.494	1.817	64.375	62.130	2.095

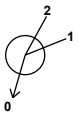
Link	US Node	Dia (mm)	Width (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
4.000	OU 1	2100	730	Manhole	1 STANDARD	W01	1500	Manhole	1 STANDARD
5.000	OU 2	2100	730	Manhole	1 STANDARD	W01	1500	Manhole	1 STANDARD
4.001	W01	1500		Manhole	1 STANDARD	W02	1500	Manhole	1 STANDARD
4.002	W02	1500		Manhole	1 STANDARD	W05	1200	Manhole	1 STANDARD
6.000	W03	600		Manhole	1 STANDARD	TANK		Junction	
6.001	TANK			Junction		W04	600	Junction	
6.002	W04	600		Junction		W05	1200	Manhole	1 STANDARD
4.003	W05	1200		Manhole	1 STANDARD	W06	1200	Manhole	1 STANDARD
4.004	W06	1200		Manhole	1 STANDARD	EX BS4	1200	Manhole	1 STANDARD

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Width (mm)	Connections	Link	IL (m)	Dia (mm)
OU 1	388249.214	396884.491	64.593	0.207	2100	730	 0	4.000	64.386	150
OU 2	388265.693	396880.247	64.605	0.300	2100	730	 0	5.000	64.305	150
W01	388247.363	396874.788	64.585	1.415	1500		 1	5.000	63.863	150
							2	4.000	64.128	150
							0	4.001	63.170	225
W02	388245.187	396866.635	64.493	1.457	1500		 1	4.001	63.036	225
							0	4.002	63.036	225
W03	388251.742	396874.443	64.615	1.775	600		 0	6.000	62.840	300
TANK	388248.130	396860.913	64.530	1.750			 1	6.000	62.784	300
							0	6.001	62.780	300

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Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Width (mm)	Connections	Link	IL (m)	Dia (mm)
W04	388247.600	396858.925	64.528	1.756	600		 1	6.001	62.772	300
							0	6.002	62.772	300
W05	388239.060	396855.502	64.496	1.767	1200		 1	6.002	62.735	300
							2	4.002	62.886	225
							0	4.003	62.729	150
W06	388238.179	396852.455	64.461	1.967	1200		 1	4.003	62.494	150
							0	4.004	62.494	150
EX BS4	388237.159	396848.964	64.375	2.245	1200		 1	4.004	62.130	150

Simulation Settings

Rainfall Methodology	FSR	Analysis Speed	Normal
FSR Region	England and Wales	Skip Steady State	x
M5-60 (mm)	18.000	Drain Down Time (mins)	240
Ratio-R	0.357	Additional Storage (m³/ha)	20.0
Summer CV	1.000	Check Discharge Rate(s)	x
Winter CV	0.840	Check Discharge Volume	x

Storm Durations

15	30	60	120	180	240	360	480	600	720	960	1440

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
1	0	0	0
30	0	0	0
100	40	0	0

Node EX BS4 Surcharged Outfall

Overrides Design Area	x	Depression Storage Area (m²)	0	Evapo-transpiration (mm/day)	0
Overrides Design Additional Inflow	x	Depression Storage Depth (mm)	0		

Applies to 30yr, 100yr+40% CC 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440 minute storms

Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)
0	0.145	300	0.145	600	0.145	900	0.145	1200	0.145
60	0.145	360	0.145	660	0.145	960	0.145	1260	0.145
120	0.145	420	0.145	720	0.145	1020	0.145	1320	0.145
180	0.145	480	0.145	780	0.145	1080	0.145	1380	0.145
240	0.145	540	0.145	840	0.145	1140	0.145	1440	0.145

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Node W05 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	x	Sump Available	✓
Invert Level (m)	62.729	Product Number	CTL-SHE-0100-5000-1400-5000
Design Depth (m)	1.400	Min Outlet Diameter (m)	0.150
Design Flow (l/s)	5.0	Min Node Diameter (mm)	1200

Node TANK Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	62.780
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.95	Time to half empty (mins)	50

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	55.0	0.0	0.750	55.0	0.0	0.751	0.0	0.0

Rainfall

Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)	Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)
1 year 15 minute summer	94.544	26.753	30 year 240 minute winter	26.043	10.359
1 year 15 minute winter	66.347	26.753	30 year 360 minute summer	29.730	7.651
1 year 30 minute summer	62.472	17.677	30 year 360 minute winter	19.326	7.651
1 year 30 minute winter	43.840	17.677	30 year 480 minute summer	23.349	6.171
1 year 60 minute summer	43.047	11.376	30 year 480 minute winter	15.513	6.171
1 year 60 minute winter	28.599	11.376	30 year 600 minute summer	19.082	5.219
1 year 120 minute summer	27.254	7.202	30 year 600 minute winter	13.038	5.219
1 year 120 minute winter	18.107	7.202	30 year 720 minute summer	16.978	4.550
1 year 180 minute summer	21.332	5.490	30 year 720 minute winter	11.410	4.550
1 year 180 minute winter	13.867	5.490	30 year 960 minute summer	13.908	3.662
1 year 240 minute summer	17.118	4.524	30 year 960 minute winter	9.213	3.662
1 year 240 minute winter	11.373	4.524	30 year 1440 minute summer	10.051	2.694
1 year 360 minute summer	13.366	3.440	30 year 1440 minute winter	6.755	2.694
1 year 360 minute winter	8.688	3.440	100 year +40% CC 15 minute summer	417.952	118.266
1 year 480 minute summer	10.646	2.814	100 year +40% CC 15 minute winter	293.299	118.266
1 year 480 minute winter	7.073	2.814	100 year +40% CC 30 minute summer	280.222	79.293
1 year 600 minute summer	8.802	2.408	100 year +40% CC 30 minute winter	196.647	79.293
1 year 600 minute winter	6.014	2.408	100 year +40% CC 60 minute summer	192.272	50.812
1 year 720 minute summer	7.910	2.120	100 year +40% CC 60 minute winter	127.741	50.812
1 year 720 minute winter	5.316	2.120	100 year +40% CC 120 minute summer	119.247	31.514
1 year 960 minute summer	6.587	1.734	100 year +40% CC 120 minute winter	79.225	31.514
1 year 960 minute winter	4.363	1.734	100 year +40% CC 180 minute summer	91.385	23.516
1 year 1440 minute summer	4.881	1.308	100 year +40% CC 180 minute winter	59.403	23.516
1 year 1440 minute winter	3.280	1.308	100 year +40% CC 240 minute summer	71.853	18.989
30 year 15 minute summer	231.260	65.439	100 year +40% CC 240 minute winter	47.737	18.989
30 year 15 minute winter	162.288	65.439	100 year +40% CC 360 minute summer	54.124	13.928
30 year 30 minute summer	153.527	43.443	100 year +40% CC 360 minute winter	35.182	13.928
30 year 30 minute winter	107.738	43.443	100 year +40% CC 480 minute summer	42.325	11.185
30 year 60 minute summer	104.640	27.653	100 year +40% CC 480 minute winter	28.120	11.185
30 year 60 minute winter	69.521	27.653	100 year +40% CC 600 minute summer	34.468	9.428
30 year 120 minute summer	64.756	17.113	100 year +40% CC 600 minute winter	23.551	9.428
30 year 120 minute winter	43.023	17.113	100 year +40% CC 720 minute summer	30.577	8.195
30 year 180 minute summer	49.709	12.792	100 year +40% CC 720 minute winter	20.549	8.195
30 year 180 minute winter	32.312	12.792	100 year +40% CC 960 minute summer	24.924	6.563
30 year 240 minute summer	39.200	10.359	100 year +40% CC 960 minute winter	16.510	6.563

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Rainfall

Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)	Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)
100 year +40% CC 1440 minute summer	17.875	4.791	100 year +40% CC 1440 minute winter	12.013	4.791

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Results for 1 year Critical Storm Duration. Lowest mass balance: 98.84%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	OU 1	10	64.424	0.038	4.9	0.1745	0.0000	OK
15 minute summer	OU 2	10	64.354	0.049	8.5	0.2562	0.0000	OK
15 minute summer	W01	10	63.243	0.073	13.2	0.1293	0.0000	OK
15 minute summer	W02	11	63.114	0.078	13.1	0.1379	0.0000	OK
60 minute summer	W03	43	62.847	0.007	0.1	0.0019	0.0000	OK
60 minute summer	TANK	42	62.846	0.066	6.1	3.4621	0.0000	OK
15 minute summer	W04	10	62.848	0.076	9.5	0.0000	0.0000	OK
15 minute summer	W05	11	62.872	0.143	13.2	0.1623	0.0000	OK
15 minute summer	W06	11	62.522	0.028	3.7	0.0314	0.0000	OK
15 minute summer	EX BS4	11	62.156	0.026	3.7	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	OU 1	4.000	W01	4.8	1.453	0.121	0.0174	
15 minute summer	OU 2	5.000	W01	8.3	1.724	0.209	0.0428	
15 minute summer	W01	4.001	W02	13.1	1.126	0.199	0.0985	
15 minute summer	W02	4.002	W05	13.2	1.124	0.233	0.1490	
60 minute summer	W03	6.000	TANK	-0.1	-0.025	-0.001	0.0763	
60 minute summer	TANK	6.001	W04	-6.1	-0.898	-0.088	0.0258	
15 minute summer	W04	6.002	W05	-9.5	-0.429	-0.136	0.2074	
15 minute summer	W05	4.003	W06	3.7	1.545	0.076	0.0076	
15 minute summer	W06	4.004	EX BS4	3.7	1.728	0.065	0.0078	5.6

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Results for 30 year Critical Storm Duration. Lowest mass balance: 98.84%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	OU 1	10	64.449	0.063	12.1	0.2917	0.0000	OK
15 minute summer	OU 2	10	64.389	0.084	20.8	0.4376	0.0000	OK
15 minute summer	W01	10	63.298	0.128	32.4	0.2260	0.0000	OK
15 minute summer	W02	11	63.169	0.133	32.2	0.2354	0.0000	OK
60 minute summer	W03	45	62.995	0.155	0.9	0.0439	0.0000	OK
60 minute summer	TANK	45	62.995	0.215	17.2	11.2454	0.0000	OK
60 minute summer	W04	45	62.995	0.223	17.8	0.0000	0.0000	OK
60 minute summer	W05	46	62.995	0.266	22.6	0.3010	0.0000	SURCHARGED
60 minute summer	W06	46	62.523	0.029	4.7	0.0332	0.0000	OK
15 minute summer	EX BS4	1	62.275	0.145	4.5	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	OU 1	4.000	W01	11.9	1.824	0.301	0.0343	
15 minute summer	OU 2	5.000	W01	20.5	2.141	0.513	0.0845	
15 minute summer	W01	4.001	W02	32.2	1.353	0.491	0.2008	
15 minute summer	W02	4.002	W05	32.3	1.398	0.571	0.2934	
60 minute summer	W03	6.000	TANK	-0.9	-0.098	-0.013	0.6287	
60 minute summer	TANK	6.001	W04	-17.2	-0.795	-0.249	0.1134	
60 minute summer	W04	6.002	W05	-17.8	-0.485	-0.254	0.5569	
60 minute summer	W05	4.003	W06	4.7	1.704	0.097	0.0088	
60 minute summer	W06	4.004	EX BS4	4.7	0.444	0.083	0.0361	23.8

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Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 98.84%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	OU 1	10	64.479	0.093	21.8	0.4278	0.0000	OK
15 minute summer	OU 2	11	64.446	0.141	37.5	0.7343	0.0000	OK
15 minute summer	W01	11	63.430	0.260	57.7	0.4597	0.0000	SURCHARGED
120 minute summer	W02	88	63.286	0.250	27.5	0.4413	0.0000	SURCHARGED
120 minute summer	W03	88	63.283	0.443	1.0	0.1254	0.0000	SURCHARGED
120 minute summer	TANK	88	63.283	0.503	21.6	26.2837	0.0000	SURCHARGED
120 minute summer	W04	88	63.283	0.511	22.1	0.0000	0.0000	SURCHARGED
120 minute summer	W05	88	63.284	0.555	27.8	0.6274	0.0000	SURCHARGED
180 minute summer	W06	164	62.524	0.030	5.0	0.0341	0.0000	OK
15 minute summer	EX BS4	1	62.275	0.145	5.0	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	OU 1	4.000	W01	21.5	2.071	0.542	0.0544	
15 minute summer	OU 2	5.000	W01	36.4	2.330	0.911	0.1385	
15 minute summer	W01	4.001	W02	56.6	1.465	0.863	0.3356	
120 minute summer	W02	4.002	W05	27.8	1.254	0.492	0.5054	
120 minute summer	W03	6.000	TANK	-1.0	-0.032	-0.015	0.9862	
120 minute summer	TANK	6.001	W04	-21.6	-0.520	-0.314	0.1449	
120 minute summer	W04	6.002	W05	-22.1	-0.313	-0.314	0.6479	
120 minute summer	W05	4.003	W06	5.0	1.730	0.103	0.0092	
180 minute summer	W06	4.004	EX BS4	5.0	0.469	0.088	0.0363	61.1

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STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for siphon and harvesting

Pipe Sizes STANDARD Manhole Sizes STANDARD

FSR Rainfall Model - England and Wales

Return Period (years)	2	PIMP (%)	100
M5-60 (mm)	18.000	Add Flow / Climate Change (%)	0
Ratio R	0.357	Minimum Backdrop Height (m)	0.200
Maximum Rainfall (mm/hr)	50	Maximum Backdrop Height (m)	1.500
Maximum Time of Concentration (mins)	30	Min Design Depth for Optimisation (m)	1.200
Foul Sewage (l/s/ha)	0.000	Min Vel for Auto Design only (m/s)	1.00
Volumetric Runoff Coeff.	1.000	Min Slope for Optimisation (1:X)	500

Designed with Level Soffits

Network Design Table for siphon and harvesting

- Indicates pipe length does not match coordinates
« - Indicates pipe capacity < flow

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
1.000	45.000#	0.000	0.0	0.247	5.00	0.0	0.600	\/	-4	Pipe/Conduit	
1.001	0.501	1.670	0.3	0.000	0.00	0.0	0.600	o	200	Pipe/Conduit	
1.002	5.390	0.054	99.8	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	
1.003	51.315	0.128	400.9	0.000	0.00	0.0	0.600	o	450	Pipe/Conduit	
2.000	15.000#	0.005	3000.0	0.245	5.00	0.0	0.600	\/	-4	Pipe/Conduit	
2.001	0.500#	1.667	0.3	0.000	0.00	0.0	0.600	o	200	Pipe/Conduit	
2.002	5.823	0.058	100.4	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
1.000	44.73	9.34	65.700	0.247	0.0	0.0	0.0	0.17	25.9«	39.9
1.001	44.73	9.34	65.680	0.247	0.0	0.0	0.0	22.35	702.0	39.9
1.002	44.56	9.41	63.206	0.247	0.0	0.0	0.0	1.31	52.0	39.9
1.003	42.61	10.26	62.927	0.247	0.0	0.0	0.0	1.01	160.5	39.9
2.000	50.00	5.78	65.600	0.245	0.0	0.0	0.0	0.32	48.2	44.2
2.001	50.00	5.78	65.580	0.245	0.0	0.0	0.0	22.35	702.1	44.2
2.002	50.00	5.85	63.211	0.245	0.0	0.0	0.0	1.30	51.9	44.2

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Network Design Table for siphon and harvesting

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
1.004	29.243	0.073	400.6	0.000	0.00	0.0	0.600	o	450	Pipe/Conduit	
3.000	35.000#	0.032	1093.8	0.235	5.00	0.0	0.600	\/	-4	Pipe/Conduit	
3.001	0.500#	1.667	0.3	0.000	0.00	0.0	0.600	o	200	Pipe/Conduit	
3.002	6.390#	0.064	99.8	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	
1.005	28.825	0.058	497.0	0.000	0.00	0.0	0.600	o	600	Pipe/Conduit	
4.000	30.000#	0.007	4285.7	0.235	5.00	0.0	0.600	\/	-4	Pipe/Conduit	
4.001	0.500#	1.667	0.3	0.000	0.00	0.0	0.600	o	200	Pipe/Conduit	
4.002	7.509	0.059	127.3	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	
5.000	20.000#	0.007	2857.1	0.116	5.00	0.0	0.600	\/	-4	Pipe/Conduit	
5.001	0.500#	1.667	0.3	0.000	0.00	0.0	0.600	o	160	Pipe/Conduit	
5.002	7.784	0.058	134.2	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	
4.003	18.541	0.054	343.4	0.000	0.00	0.0	0.600	o	450	Pipe/Conduit	
1.006	31.179	0.052	599.6	0.000	0.00	0.0	0.600	o	750	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
1.004	41.58	10.74	62.799	0.492	0.0	0.0	0.0	1.01	160.6	73.9
3.000	50.00	6.08	65.500	0.235	0.0	0.0	0.0	0.54	80.9	42.4
3.001	50.00	6.08	65.468	0.235	0.0	0.0	0.0	22.35	702.1	42.4
3.002	50.00	6.16	63.214	0.235	0.0	0.0	0.0	1.31	52.0	42.4
1.005	40.69	11.18	62.576	0.727	0.0	0.0	0.0	1.09	306.9	106.9
4.000	50.00	6.87	65.400	0.235	0.0	0.0	0.0	0.27	40.1«	42.5
4.001	50.00	6.87	65.268	0.235	0.0	0.0	0.0	22.35	702.1	42.5
4.002	50.00	6.98	63.211	0.235	0.0	0.0	0.0	1.16	46.0	42.5
5.000	50.00	6.01	65.700	0.116	0.0	0.0	0.0	0.33	49.5	20.9
5.001	50.00	6.01	65.680	0.116	0.0	0.0	0.0	19.36	389.2	20.9
5.002	50.00	6.13	63.220	0.116	0.0	0.0	0.0	1.13	44.8	20.9
4.003	50.00	7.26	62.898	0.351	0.0	0.0	0.0	1.09	173.6	63.4
1.006	39.82	11.64	62.368	1.079	0.0	0.0	0.0	1.14	501.7	155.1

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Network Design Table for siphon and harvesting

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
1.007	7.723	0.026	297.0	0.000	0.00	0.0	0.600	ooo	-1	Pipe/Conduit	
1.008	17.634	0.059	298.9	0.000	0.00	0.0	0.600	o	300	Pipe/Conduit	
1.009	18.442	1.025	18.0	0.000	0.00	0.0	0.600	o	300	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
1.007	39.60	11.76	62.316	1.079	0.0	0.0	0.0	1.09	410.9	155.1
1.008	39.01	12.08	61.471	1.079	0.0	0.0	0.0	0.90	63.9«	155.1
1.009	38.87	12.17	61.412	1.079	0.0	0.0	0.0	3.72	263.2	155.1

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Merchant Exchange
17-19 Whitworth Street West
Manchester, M1 5WG

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Manhole Schedules for siphon and harvesting

MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam.,L*W (mm)	Pipe Out PN	Pipe Out Invert Level (m)	Pipe Out Diameter (mm)	Pipes In PN	Pipes In Invert Level (m)	Pipes In Diameter (mm)	Backd (mm
SRHgutter	66.000	0.300	Junction		1.000	65.700	-4				
SRHdp	66.000	0.320	Junction		1.001	65.680	200	1.000	65.700	-4	
SRHsiphon gf	65.000	1.794	Sealed Manhole	225	1.002	63.206	225	1.001	64.010	200	
SRH1	64.350	1.423	Open Manhole	1350	1.003	62.927	450	1.002	63.152	225	
SRHgutter	66.000	0.400	Junction		2.000	65.600	-4				
SRHdp	66.000	0.420	Junction		2.001	65.580	200	2.000	65.595	-4	
SRHsiphon gf	64.313	1.102	Junction		2.002	63.211	225	2.001	63.913	200	
SRH2	64.220	1.421	Open Manhole	1350	1.004	62.799	450	1.003	62.799	450	
								2.002	63.153	225	
SRHgutter	66.000	0.500	Junction		3.000	65.500	-4				
SRHdp	66.000	0.532	Junction		3.001	65.468	200	3.000	65.468	-4	
SRHsiphon gf	64.496	1.282	Junction		3.002	63.214	225	3.001	63.801	200	
SRH3	64.260	1.684	Open Manhole	1500	1.005	62.576	600	1.004	62.726	450	
								3.002	63.150	225	
SRHgutter	66.000	0.600	Junction		4.000	65.400	-4				
SRHdp	66.000	0.732	Junction		4.001	65.268	200	4.000	65.393	-4	
SRHsiphon gf	64.196	0.985	Junction		4.002	63.211	225	4.001	63.601	200	
SRHgutter	66.000	0.300	Junction		5.000	65.700	-4				
SRHdp	66.000	0.320	Junction		5.001	65.680	160	5.000	65.693	-4	
SRHsiphon gf	64.265	1.045	Junction		5.002	63.220	225	5.001	64.013	160	
SRH5	64.210	1.312	Open Manhole	1350	4.003	62.898	450	4.002	63.152	225	
								5.002	63.162	225	
SRH4	64.170	1.802	Open Manhole	2100	1.006	62.368	750	1.005	62.518	600	
								4.003	62.844	450	
SRH6a	64.500	2.184	Open Manhole	2100	1.007	62.316	-1	1.006	62.316	750	
SRHtank	64.271	2.800	Open Manhole	100	1.008	61.471	300	1.007	62.290	-1	
SRH6	64.300	2.888	Open Manhole	1500	1.009	61.412	300	1.008	61.412	300	
SRH	64.301	3.914	Open Manhole	0		OUTFALL		1.009	60.387	300	

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Area Summary for siphon and harvesting

Pipe Number	PIMP Type	PIMP Name	PIMP (%)	Gross Area (ha)	Imp. Area (ha)	Pipe Total (ha)
1.000	User	-	100	0.247	0.247	0.247
1.001	-	-	100	0.000	0.000	0.000
1.002	-	-	100	0.000	0.000	0.000
1.003	-	-	100	0.000	0.000	0.000
2.000	User	-	100	0.245	0.245	0.245
2.001	-	-	100	0.000	0.000	0.000
2.002	-	-	100	0.000	0.000	0.000
1.004	-	-	100	0.000	0.000	0.000
3.000	-	-	100	0.235	0.235	0.235
3.001	-	-	100	0.000	0.000	0.000
3.002	-	-	100	0.000	0.000	0.000
1.005	-	-	100	0.000	0.000	0.000
4.000	User	-	100	0.235	0.235	0.235
4.001	-	-	100	0.000	0.000	0.000
4.002	-	-	100	0.000	0.000	0.000
5.000	-	-	100	0.116	0.116	0.116
5.001	-	-	100	0.000	0.000	0.000
5.002	-	-	100	0.000	0.000	0.000
4.003	-	-	100	0.000	0.000	0.000
1.006	-	-	100	0.000	0.000	0.000
1.007	-	-	100	0.000	0.000	0.000
1.008	-	-	100	0.000	0.000	0.000
1.009	-	-	100	0.000	0.000	0.000
				Total	Total	Total
				1.079	1.079	1.079

Surcharged Outfall Details for siphon and harvesting

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
1.009	SRH	64.301	60.387	59.300	0	0

Datum (m) 60.050 Offset (mins) 0

Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)
60	1.000	300	1.000	540	1.000	780	1.000	1020	1.000	1260	1.000
120	1.000	360	1.000	600	1.000	840	1.000	1080	1.000	1320	1.000
180	1.000	420	1.000	660	1.000	900	1.000	1140	1.000	1380	1.000
240	1.000	480	1.000	720	1.000	960	1.000	1200	1.000	1440	1.000

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Simulation Criteria for siphon and harvesting

Volumetric Runoff Coeff	1.000	Additional Flow - % of Total Flow	0.000
Areal Reduction Factor	1.000	MADD Factor * 10m³/ha Storage	2.000
Hot Start (mins)	0	Inlet Coeffiecient	0.800
Hot Start Level (mm)	0	Flow per Person per Day (l/per/day)	0.000
Manhole Headloss Coeff (Global)	0.500	Run Time (mins)	60
Foul Sewage per hectare (l/s)	0.000	Output Interval (mins)	1

Number of Input Hydrographs 0	Number of Offline Controls 5	Number of Time/Area Diagrams 0
Number of Online Controls 6	Number of Storage Structures 1	Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model	FSR	Profile Type	Summer
Return Period (years)	2	Cv (Summer)	1.000
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	18.000	Storm Duration (mins)	30
Ratio R	0.357		

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Online Controls for siphon and harvesting

Siphon Manhole: SRHdp, DS/PN: 1.001, Volume (m³): 6.8

Invert Level (m) 65.680 Cut In Height (m) 0.025 Cut Out Height (m) 0.020

Depth (m)	Outflow (l/s)	Depth (m)	Outflow (l/s)
0.020	155.5300	0.200	155.5300
0.100	155.5300	0.260	155.5300

Siphon Manhole: SRHdp, DS/PN: 2.001, Volume (m³): 2.3

Invert Level (m) 65.580 Cut In Height (m) 0.025 Cut Out Height (m) 0.020

Depth (m)	Outflow (l/s)	Depth (m)	Outflow (l/s)
0.020	155.5300	0.200	155.5300
0.100	155.5300	0.260	155.5300

Siphon Manhole: SRHdp, DS/PN: 3.001, Volume (m³): 5.3

Invert Level (m) 65.468 Cut In Height (m) 0.025 Cut Out Height (m) 0.020

Depth (m)	Outflow (l/s)	Depth (m)	Outflow (l/s)
0.020	155.5300	0.200	155.5300
0.100	155.5300	0.260	155.5300

Siphon Manhole: SRHdp, DS/PN: 4.001, Volume (m³): 4.5

Invert Level (m) 65.268 Cut In Height (m) 0.025 Cut Out Height (m) 0.020

Depth (m)	Outflow (l/s)	Depth (m)	Outflow (l/s)
0.020	155.5300	0.200	155.5300
0.100	155.5300	0.260	155.5300

Siphon Manhole: SRHdp, DS/PN: 5.001, Volume (m³): 3.0

Invert Level (m) 65.680 Cut In Height (m) 0.025 Cut Out Height (m) 0.020

Depth (m)	Outflow (l/s)	Depth (m)	Outflow (l/s)
0.020	77.7300	0.200	77.7300
0.100	77.7300	0.260	77.7300

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Hydro-Brake® Optimum Manhole: SRH6, DS/PN: 1.009, Volume (m³): 6.3

Unit Reference	MD-SHE-0181-1810-1600-1810
Design Head (m)	1.600
Design Flow (l/s)	18.1
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	181
Invert Level (m)	61.412
Minimum Outlet Pipe Diameter (mm)	225
Suggested Manhole Diameter (mm)	1500

Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.600	18.1	Kick-Flo®	1.021	14.6
Flush-Flo™	0.472	18.1	Mean Flow over Head Range	-	15.7

The hydrological calculations have been based on the Head/Discharge relationship for the Hydro-Brake® Optimum as specified. Should another type of control device other than a Hydro-Brake Optimum® be utilised then these storage routing calculations will be invalidated

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	6.4	1.200	15.8	3.000	24.4	7.000	36.7
0.200	16.1	1.400	17.0	3.500	26.3	7.500	38.0
0.300	17.5	1.600	18.1	4.000	28.0	8.000	39.2
0.400	18.0	1.800	19.1	4.500	29.7	8.500	40.3
0.500	18.1	2.000	20.1	5.000	31.2	9.000	41.5
0.600	17.9	2.200	21.1	5.500	32.7	9.500	42.6
0.800	17.2	2.400	21.9	6.000	34.1		
1.000	15.0	2.600	22.8	6.500	35.4		

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Offline Controls for siphon and harvesting

Depth/Flow Relationship Manhole: SRHdp, DS/PN: 1.001, Loop to PN: 1.002

Invert Level (m) 65.680

Depth (m)	Flow (l/s)
0.020	0.5000

Depth/Flow Relationship Manhole: SRHdp, DS/PN: 2.001, Loop to PN: 2.002

Invert Level (m) 65.580

Depth (m)	Flow (l/s)
0.020	0.5000

Depth/Flow Relationship Manhole: SRHdp, DS/PN: 3.001, Loop to PN: 3.002

Invert Level (m) 65.468

Depth (m)	Flow (l/s)
0.020	0.5000

Depth/Flow Relationship Manhole: SRHdp, DS/PN: 4.001, Loop to PN: 4.002

Invert Level (m) 65.580

Depth (m)	Flow (l/s)
0.020	0.5000

Depth/Flow Relationship Manhole: SRHdp, DS/PN: 5.001, Loop to PN: 5.002

Invert Level (m) 65.680

Depth (m)	Flow (l/s)
0.500	0.5000

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Storage Structures for siphon and harvesting

Cellular Storage Manhole: SRHtank, DS/PN: 1.008

Invert Level (m) 61.471 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.00000

Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)
0.000	467.0	0.0	1.393	0.0	0.0
1.392	467.0	0.0			

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1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for siphon and harvesting

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coeffiecient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

Number of Input Hydrographs 0 Number of Offline Controls 5 Number of Time/Area Diagrams 0
Number of Online Controls 6 Number of Storage Structures 1 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FSR Ratio R 0.357
Region England and Wales Cv (Summer) 1.000
M5-60 (mm) 18.000 Cv (Winter) 1.000

Margin for Flood Risk Warning (mm)	300.0
Analysis Timestep	2.5 Second Increment (Extended)
DTS Status	OFF
DVD Status	ON
Inertia Status	ON

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440
Return Period(s) (years)	1, 30, 100
Climate Change (%)	0, 0, 45

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.
1.000	SRHgutter	15 Summer	1	+0%				
1.001	SRHdp	60 Summer	1	+0%			1/15 Summer	72
1.002	SRHsiphon gf	15 Summer	1	+0%	1/15 Summer			
1.003	SRH1	15 Summer	1	+0%	100/15 Summer			
2.000	SRHgutter	15 Summer	1	+0%	100/15 Summer			
2.001	SRHdp	360 Winter	1	+0%	100/15 Summer		1/15 Summer	72
2.002	SRHsiphon gf	15 Summer	1	+0%	1/15 Summer			
1.004	SRH2	15 Summer	1	+0%	30/15 Summer			
3.000	SRHgutter	15 Summer	1	+0%	100/15 Summer			
3.001	SRHdp	60 Winter	1	+0%			1/15 Summer	72
3.002	SRHsiphon gf	15 Summer	1	+0%	30/15 Summer			
1.005	SRH3	15 Summer	1	+0%	100/15 Summer			
4.000	SRHgutter	15 Summer	1	+0%	100/15 Summer			
4.001	SRHdp	960 Winter	1	+0%				0

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1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for siphon and harvesting

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
1.000	SRHgutter	65.793	-0.167	0.000	0.46		37.1	FLOOD RISK*	
1.001	SRHdp	65.705	-0.175	0.000	0.18	0.5	25.9	FLOOD RISK*	
1.002	SRHsiphon gf	63.440	0.009	0.000	1.14		37.4	SURCHARGED*	3
1.003	SRH1	63.096	-0.281	0.000	0.25		35.9	OK	
2.000	SRHgutter	65.718	-0.142	0.000	0.59		36.8	FLOOD RISK*	
2.001	SRHdp	65.605	-0.175	0.000	0.04	0.5	5.5	OK*	
2.002	SRHsiphon gf	63.440	0.004	0.000	1.08		36.7	SURCHARGED*	
1.004	SRH2	63.025	-0.224	0.000	0.50		68.2	OK	
3.000	SRHgutter	65.616	-0.144	0.000	0.50		35.5	OK	
3.001	SRHdp	65.493	-0.175	0.000	0.12	0.5	17.7	OK*	
3.002	SRHsiphon gf	63.401	-0.038	0.000	0.99		35.5	OK*	
1.005	SRH3	62.840	-0.336	0.000	0.40		98.4	OK	
4.000	SRHgutter	65.516	-0.144	0.000	0.55		35.8	OK	
4.001	SRHdp	65.293	-0.175	0.000	0.02	0.0	2.9	OK*	

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1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for siphon and harvesting

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.
4.002	SRHsiphon gf	15 Summer	1	+0%	30/15 Summer			
5.000	SRHgutter	15 Summer	1	+0%				
5.001	SRHdp	120 Summer	1	+0%			1/15 Summer	72
5.002	SRHsiphon gf	15 Summer	1	+0%	30/15 Summer			
4.003	SRH5	15 Summer	1	+0%	100/15 Summer			
1.006	SRH4	15 Summer	1	+0%	100/15 Summer			
1.007	SRH6a	15 Summer	1	+0%	100/15 Summer			
1.008	SRHtank	180 Summer	1	+0%	30/15 Summer			
1.009	SRH6	180 Summer	1	+0%	30/15 Summer			

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m^3)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
4.002	SRHsiphon gf	63.436	0.000	0.000	1.03		35.1	OK*	
5.000	SRHgutter	65.771	-0.189	0.000	0.33		17.6	FLOOD RISK*	
5.001	SRHdp	65.705	-0.135	0.000	0.09	0.0	8.6	FLOOD RISK*	
5.002	SRHsiphon gf	63.337	-0.108	0.000	0.52		17.6	OK*	
4.003	SRH5	63.092	-0.256	0.000	0.38		53.0	OK	
1.006	SRH4	62.685	-0.433	0.000	0.37		144.2	OK	
1.007	SRH6a	62.521	-0.195	0.000	0.52		144.4	OK	
1.008	SRHtank	61.696	-0.075	0.000	0.31		17.2	OK	
1.009	SRH6	61.673	-0.039	0.000	0.08		17.1	OK	

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30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for siphon and harvesting

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coeffiecient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

Number of Input Hydrographs 0 Number of Offline Controls 5 Number of Time/Area Diagrams 0
Number of Online Controls 6 Number of Storage Structures 1 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FSR Ratio R 0.357
Region England and Wales Cv (Summer) 1.000
M5-60 (mm) 18.000 Cv (Winter) 1.000

Margin for Flood Risk Warning (mm)	300.0
Analysis Timestep	2.5 Second Increment (Extended)
DTS Status	OFF
DVD Status	ON
Inertia Status	ON

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440
Return Period(s) (years)	1, 30, 100
Climate Change (%)	0, 0, 45

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.
1.000	SRHgutter	15 Summer	30	+0%				
1.001	SRHdp	360 Summer	30	+0%			1/15 Summer	72
1.002	SRHsiphon gf	15 Summer	30	+0%	1/15 Summer			
1.003	SRH1	15 Summer	30	+0%	100/15 Summer			
2.000	SRHgutter	15 Summer	30	+0%	100/15 Summer			
2.001	SRHdp	720 Winter	30	+0%	100/15 Summer		1/15 Summer	72
2.002	SRHsiphon gf	15 Summer	30	+0%	1/15 Summer			
1.004	SRH2	15 Summer	30	+0%	30/15 Summer			
3.000	SRHgutter	15 Summer	30	+0%	100/15 Summer			
3.001	SRHdp	30 Winter	30	+0%			1/15 Summer	72
3.002	SRHsiphon gf	15 Summer	30	+0%	30/15 Summer			
1.005	SRH3	15 Summer	30	+0%	100/15 Summer			
4.000	SRHgutter	15 Summer	30	+0%	100/15 Summer			
4.001	SRHdp	480 Winter	30	+0%				0

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30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for siphon and harvesting

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
1.000	SRHgutter	65.848	-0.112	0.000	1.15		92.0	FLOOD RISK*	
1.001	SRHdp	65.705	-0.175	0.000	0.14	0.5	20.1	FLOOD RISK*	
1.002	SRHsiphon gf	63.806	0.375	0.000	2.79		91.5	SURCHARGED*	3
1.003	SRH1	63.354	-0.023	0.000	0.59		86.8	OK	
2.000	SRHgutter	65.829	-0.031	0.000	1.46		90.4	FLOOD RISK*	
2.001	SRHdp	65.605	-0.175	0.000	0.05	0.5	7.4	OK*	
2.002	SRHsiphon gf	63.776	0.340	0.000	2.66		90.3	SURCHARGED*	
1.004	SRH2	63.269	0.020	0.000	1.22		167.5	SURCHARGED	
3.000	SRHgutter	65.723	-0.037	0.000	1.23		87.4	FLOOD RISK*	
3.001	SRHdp	65.493	-0.175	0.000	0.45	0.5	64.6	OK*	
3.002	SRHsiphon gf	63.759	0.320	0.000	2.44		86.9	SURCHARGED*	
1.005	SRH3	63.048	-0.128	0.000	0.95		236.7	OK	
4.000	SRHgutter	65.624	-0.036	0.000	1.34		87.8	OK	
4.001	SRHdp	65.293	-0.175	0.000	0.07	0.0	10.2	OK*	

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30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for siphon and harvesting

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.
4.002	SRHsiphon gf	15 Summer	30	+0%	30/15 Summer			
5.000	SRHgutter	15 Summer	30	+0%				
5.001	SRHdp	1440 Summer	30	+0%			1/15 Summer	72
5.002	SRHsiphon gf	15 Summer	30	+0%	30/15 Summer			
4.003	SRH5	15 Summer	30	+0%	100/15 Summer			
1.006	SRH4	15 Summer	30	+0%	100/15 Summer			
1.007	SRH6a	30 Summer	30	+0%	100/15 Summer			
1.008	SRHtank	180 Summer	30	+0%	30/15 Summer			
1.009	SRH6	180 Winter	30	+0%	30/15 Summer			

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m^3)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
4.002	SRHsiphon gf	63.756	0.320	0.000	2.54		86.9	SURCHARGED*	
5.000	SRHgutter	65.833	-0.127	0.000	0.80		43.1	FLOOD RISK*	
5.001	SRHdp	65.705	-0.135	0.000	0.04	0.0	3.6	FLOOD RISK*	
5.002	SRHsiphon gf	63.470	0.025	0.000	1.27		43.1	SURCHARGED*	
4.003	SRH5	63.245	-0.103	0.000	0.94		130.3	OK	
1.006	SRH4	62.926	-0.192	0.000	0.89		348.0	OK	
1.007	SRH6a	62.716	0.000	0.000	1.17		325.5	OK	
1.008	SRHtank	62.113	0.342	0.000	0.51		27.7	SURCHARGED	
1.009	SRH6	62.366	0.654	0.000	0.08		18.0	SURCHARGED	

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100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for siphon and harvesting

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coeffiecient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

Number of Input Hydrographs 0 Number of Offline Controls 5 Number of Time/Area Diagrams 0
Number of Online Controls 6 Number of Storage Structures 1 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FSR Ratio R 0.357
Region England and Wales Cv (Summer) 1.000
M5-60 (mm) 18.000 Cv (Winter) 1.000

Margin for Flood Risk Warning (mm) 300.0
Analysis Timestep 2.5 Second Increment (Extended)
DTS Status OFF
DVD Status ON
Inertia Status ON

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440
Return Period(s) (years) 1, 30, 100
Climate Change (%) 0, 0, 45

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.
1.000	SRHgutter	15 Summer	100	+45%				
1.001	SRHdp	15 Summer	100	+45%			1/15 Summer	72
1.002	SRHsiphon gf	15 Winter	100	+45%	1/15 Summer			
1.003	SRH1	15 Summer	100	+45%	100/15 Summer			
2.000	SRHgutter	15 Summer	100	+45%	100/15 Summer			
2.001	SRHdp	15 Summer	100	+45%	100/15 Summer		1/15 Summer	72
2.002	SRHsiphon gf	15 Winter	100	+45%	1/15 Summer			
1.004	SRH2	15 Summer	100	+45%	30/15 Summer			
3.000	SRHgutter	15 Summer	100	+45%	100/15 Summer			
3.001	SRHdp	15 Summer	100	+45%			1/15 Summer	72
3.002	SRHsiphon gf	15 Winter	100	+45%	30/15 Summer			
1.005	SRH3	15 Summer	100	+45%	100/15 Summer			
4.000	SRHgutter	15 Summer	100	+45%	100/15 Summer			
4.001	SRHdp	15 Summer	100	+45%				0

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100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for siphon and harvesting

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
1.000	SRHgutter	65.928	-0.032	0.000	2.09		168.2	FLOOD RISK*	
1.001	SRHdp	65.784	-0.096	0.000	1.08	0.5	155.5	FLOOD RISK*	
1.002	SRHsiphon gf	65.000	1.569	0.000	4.76		155.9	FLOOD RISK*	3
1.003	SRH1	63.929	0.552	0.000	1.05		152.8	SURCHARGED	
2.000	SRHgutter	65.948	0.088	0.000	2.74		169.7	FLOOD RISK*	
2.001	SRHdp	65.788	0.008	0.000	1.08	0.5	155.5	FLOOD RISK*	
2.002	SRHsiphon gf	64.113	0.677	0.000	4.54		154.2	FLOOD RISK*	
1.004	SRH2	63.779	0.530	0.000	2.21		303.7	SURCHARGED	
3.000	SRHgutter	65.849	0.089	0.000	2.31		163.4	FLOOD RISK*	
3.001	SRHdp	65.524	-0.144	0.000	1.08	0.5	155.5	OK*	
3.002	SRHsiphon gf	64.001	0.562	0.000	4.26		151.9	SURCHARGED*	
1.005	SRH3	63.420	0.244	0.000	1.81		450.4	SURCHARGED	
4.000	SRHgutter	65.756	0.096	0.000	2.50		163.8	FLOOD RISK*	
4.001	SRHdp	65.446	-0.022	0.000	1.08	0.0	155.5	OK*	

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100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for siphon and harvesting

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.
4.002	SRHsiphon gf	15 Winter	100	+45%	30/15 Summer			
5.000	SRHgutter	15 Summer	100	+45%				
5.001	SRHdp	15 Summer	100	+45%			1/15 Summer	72
5.002	SRHsiphon gf	15 Summer	100	+45%	30/15 Summer			
4.003	SRH5	15 Summer	100	+45%	100/15 Summer			
1.006	SRH4	15 Summer	100	+45%	100/15 Summer			
1.007	SRH6a	240 Winter	100	+45%	100/15 Summer			
1.008	SRHtank	240 Winter	100	+45%	30/15 Summer			
1.009	SRH6	240 Winter	100	+45%	30/15 Summer			

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m^3)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
4.002	SRHsiphon gf	63.801	0.365	0.000	4.43		151.7	SURCHARGED*	
5.000	SRHgutter	65.911	-0.049	0.000	1.50		80.5	FLOOD RISK*	
5.001	SRHdp	65.729	-0.111	0.000	0.84	0.0	77.7	FLOOD RISK*	
5.002	SRHsiphon gf	63.748	0.303	0.000	2.29		77.8	SURCHARGED*	
4.003	SRH5	63.443	0.095	0.000	1.68		233.3	SURCHARGED	
1.006	SRH4	63.217	0.099	0.000	1.70		664.0	SURCHARGED	
1.007	SRH6a	62.970	0.254	0.000	0.53		148.6	SURCHARGED	
1.008	SRHtank	62.970	1.199	0.000	0.51		27.9	SURCHARGED	
1.009	SRH6	63.090	1.378	0.000	0.08		17.8	SURCHARGED	

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Appendix K

Trade Effluent Consent

Water Meter Information

S106 Approval Notice

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WATER INDUSTRY ACT 1991

CONSENT TO THE DISCHARGE OF TRADE EFFLUENT

Whereas **Manchester City Council**

(hereinafter called "the Trader") whose Head Office or Registered Office is at

Corporate Estates Team 8th Floor, Town Hall Extension PO Box 532 Manchester M60 2LA

Is the **owner/occupier** of the trade premises at:

Hammerstone Road Depot
Hammerstone Road
Gorton
Manchester
M18 8EQ

and by the Duly made application dated **01 June 2023**

Have applied to UNITED UTILITIES WATER LIMITED (hereinafter called "the Company") for consent to discharge trade effluent from the said trade premises into the sewers.

Under the provisions of the above mentioned Act the discharge of trade effluent in accordance with the said application form would not be lawful without the consent of the Company.

NOW THEREFORE in exercise of the powers conferred upon them by the above Act the Company HEREBY CONSENT to the discharge of trade effluent by the Trader from the said premises into their sewers SUBJECT TO THE FOLLOWING CONDITIONS:

Nature of discharge

1a) Subject to the provisions of conditions 6,7,8 and 9 below the nature or composition of the trade effluent to be discharged under this Consent shall be solely as specified in the said application form and shall consist solely of waste water derived from **commercial and council vehicle washdown facility, for street cleaning vehicles, refuse collection vehicles and normal operational vehicles.**

1b) The trader shall give to the Company prior written notice of any change in the process or the process materials or any other circumstances likely to alter the constituents of the trade effluent as set out in condition 1(a). In such circumstances, no substance of which the Company has not had previous notice, may be discharged unless and until the Company has agreed to accept the substance at a limit imposed by the Company which shall then be deemed to be incorporated in this Consent by agreement and shall not prejudice the right of the Company to serve a Direction earlier than two years from the date of such incorporation.

The Trader shall also give not less than seven days written notice to the Company of any change in the name of the occupier or owner.

Sewer affected

2. The sewer into which the trade effluent may be discharged and the point of discharge is the foul sewer situate at **Hammerstone Road (Manhole Ref: 2801)**.

Connections

3. No connections shall be made to the said sewer without the prior approval of the Company and all such connections shall be constructed and maintained to the satisfaction of the Company at the expense of the Trader.

Maximum volume of discharge

4. The maximum amount of the trade effluent discharged in any one day of twenty four hours shall not exceed **30** m^3 without prior written consent of the Company.

Maximum rate of discharge

5. The highest rate at which the trade effluent may be discharged shall not exceed **4** litre/sec.

Matters to be eliminated prior to discharge to sewers

6. The following matters shall be eliminated from the trade effluent before it is discharged into the sewers of the Company:

a) petroleum spirit;

b) calcium carbide;

c) carbon disulphide;

d) except as provided in paragraph 7 hereof, the prescribed substances listed in Schedule 1 to The Trade Effluents (Prescribed Processes and Substances) Regulations 1989, as amended from time to time, insofar as they are in concentration greater than the background concentration (as defined in the said Regulations);

e) where the trade effluent derives from a prescribed process mentioned in Schedule 2 to the said Regulations, and except as provided in paragraph 7 hereof, asbestos (as defined in the said Regulations) and chloroform in concentration greater than the background concentration (as defined in the said Regulations);

f) organo-halogen compounds including pesticide residues and degreasing agents;

g) any substances which either alone or in combination with each other or with any other matter lawfully present in the said sewers would be likely to;

i) cause a nuisance or produce flammable, harmful or toxic vapours either in the sewers or at the sewage works of the Company;

ii) injure the sewers or interfere with the free flow of their contents or affect prejudicially the treatment and disposal of their contents or have injurious effects on the sewage treatment works to which it is conveyed or upon any treatment plant there;

iii) be dangerous to or cause injury to any person working in the sewers or at the sewage treatment works;

iv) affect prejudicially any watercourse, estuary or coastal water into which the treated effluent will eventually be discharged.

Matters to be limited prior to discharge to sewer

7. The trade effluent shall not contain

a) Arsenic as As in excess of **50** ug/l

b) Chloroform in excess of **100** ug/l

c) Cyanides and cyanogen compounds which produce hydrogen cyanide on acidification in excess of **1** mg/l

d) Separable grease and oil in excess of **100**mg/l

e) Sulphates as SO_4 in excess of **1,000** mg/l

f) Sulphides, hydrosulphides, polysulphides and substances producing hydrogen sulphide on acidification in excess of **1** mg/l

g) Total suspended solids at pH 7.0 and dried at 110º C in excess of **1,000** mg/l

h) Toxic metals in excess of **10,000** ug/l either individually or in total ie Antimony, Beryllium, Chromium, Copper, Lead, Nickel, Selenium, Silver, Tin, Vanadium, Zinc;

Temperature

8. No trade effluent shall be discharged which has a temperature higher than 43.3°C (110°F).

pH value

9. No trade effluent shall be discharged having a pH of less than **6** or greater than **10**

Inspection Chamber

10. a) An inspection chamber or manhole shall be provided and maintained by the Trader in a suitable position in connection with each pipe through which the trade effluent is discharged and shall be so constructed and maintained as to enable a person readily to obtain at any time samples of the trade effluent so discharged, to the approval of the Company.

b) Suitable apparatus for measuring and automatically recording the volume and composition of trade effluent discharged shall be provided and maintained in working order by the Trader in connection with every such pipe, unless otherwise exempted in writing by the Company.

c) If the measuring and recording apparatus as aforesaid ceases to function satisfactorily, then the Company shall have the right to make estimates of the volume and composition of the trade effluent until such time as the said apparatus is again operating to the satisfaction of the Company.

d) Records shall be kept by the Trader of the volume, rate of discharge, nature and composition of the trade effluent discharged to the sewer, together with any records required to be kept by the Trader under the provisions of any Notice of Determination issued by the Secretary of State under Sections 120 and 132 of the Water Industry Act 1991. Such records shall be kept available for inspection at all reasonable times by an authorised officer of the Company and copies shall be sent to the Company on demand.

e) The foregoing provision of this condition shall be deemed to be complied with if other methods of sampling the trade effluent, determining its nature and composition, and measuring and recording the discharge are agreed and confirmed in writing by the Company.

Dated 01 August 2023

Issuing Office Wastewater Services
Lingley Mere Business Park
Lingley Green Avenue
Great Sankey
Warrington
WA5 3LP

Signed PP

WASTEWATER ASSET MANAGER
for and on behalf of United Utilities Water Limited

Your attention is drawn to Section 122 of the Water Industry Act 1991 which provides that any person aggrieved by any conditions attached to this Consent may appeal to the Director General of Water Services.

Outlook

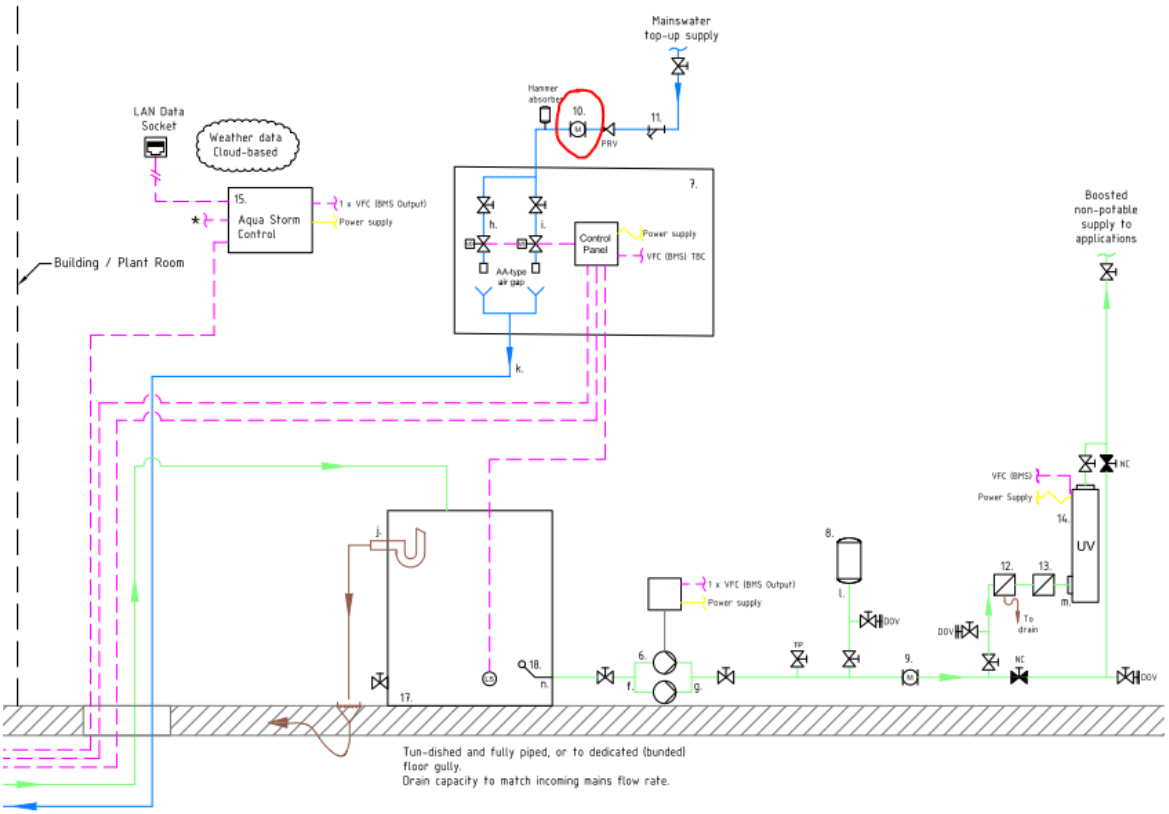
RE: Hammerstone Road - Secondary Water Meter

From Philip Godfrey <pgodfrey@abeng.co.uk>
Date Mon 2024-12-23 11:08
To Webb, Dave (MS) <Dave.Webb@morgansindall.com>; Craig Sanders <csanders@abeng.co.uk>
Cc Boardman, John (MSC) <John.Boardman@morgansindall.com>; Ryan, James (MS) <James.Ryan@morgansindall.com>

Hi Dave.

Picking up on some old emails, water to the RW is already dub metered, so no need for an extra one.

For the BMS connection, I will look into this as I don't know how or if this is being connected to the BMS. I need to discuss with Craig what we agreed on for our costs. @Craig Sanders one to discuss.



Cheers

Philip Godfrey

Technical Director

t: 0151 228 4661 **m:** 07825 517864 **e:** pgodfrey@abeng.co.uk

Holly Terrace **|** 9 - 17 Derby Lane **|** Liverpool **|** L13 6QA

Click here to watch our company video

www.abeng.co.uk

Citation ISO Certification — Environmental management — ISO 14001: 2015 — REGISTERED — Certificate No:448762024

Citation ISO Certification — Quality management — ISO 9001: 2015 — REGISTERED — Certificate No:450752024

From: Webb, Dave (MS) <Dave.Webb@morgansindall.com>
Sent: 07 November 2024 14:44
To: Anna Lucas <Anna.Lucas@manchester.gov.uk>; Philip Godfrey <pgodfrey@abeng.co.uk>

Cc: Boardman, John (MSC) <John.Boardman@morgansindall.com>; Ryan, James (MS) <James.Ryan@morgansindall.com>
Subject: RE: Hammerstone Road - Secondary Water Meter

Hi Anna,

The below is clear as day now. We will not approach UU with regards to installing a pulsed meter. Instead, we will install a secondary pulsed water meter within our site boundary that monitors the washdown area and is linked to site BMS.

Hi Phil,

I know we have discussed this topic, can you please ensure that we show/install a secondary pulsed water meter on the water supply to the washdown area and monitored by the BMS?

Cheers.

Dave Webb
Building Services Manager

Dave.Webb@morgansindall.com | 07812 487385
6th Floor, Anchorage 2, Salford Quays, Salford Quays, M50 3YW | 0161 874 1000

MORGAN SINDALL CONSTRUCTION

morgansindallconstruction.com



From: Anna Lucas <Anna.Lucas@manchester.gov.uk>
Sent: Wednesday, November 6, 2024 4:17 PM
To: Webb, Dave (MS) <Dave.Webb@morgansindall.com>
Subject: FW: Hammerstone Road - Secondary Water Meter

Hi Dave

Please see below response from our energy officer regarding the LOA. Are you happy to proceed with the amended wording in blue?

Kind regards
Anna

From: Lindsay Oldham <lindsay.oldham@manchester.gov.uk>
Sent: 06 November 2024 16:14
To: Anna Lucas <Anna.Lucas@manchester.gov.uk>
Cc: Emma Rubezevicius <emma.rubezevicius@manchester.gov.uk>; Joel Anderson <janderson@wave-utilities.co.uk>; John Burke <john.burke@manchester.gov.uk>
Subject: RE: Hammerstone Road - Secondary Water Meter

Hi Anna

I am happy to sign a LOA for **your** description of works, which is correct, i.e. to install a secondary pulsed meter downstream of the existing water meter (within the site's boundary). However, Morgan Sindall's letter says the existing water meter is to be replaced with a pulsed meter to link to the BMS (copied and pasted in blue below)

As previously explained and verified by the retailer, UU will only permit their own certified data loggers to be installed on their meters, by their contractors and to date, have not been willing to allow a connection to a site BMS system. The content of Mogan Sindall's draft LOA does not seem to reflect this fundamental condition.

Ameon Utilities need to install a secondary pulsed meter, downstream of the UU revenue meter. That meter should be in its own chamber or cabinet, on customer's side and as it is effectively a sub-meter, there should be no requirement for UU permissions.

Dear Sir / Madam,
I hereby authorise Ameon Utilities to work on the behalf of Manchester City Council (MCC) to apply to UU and request for the existing water meter SPID 3002532363W15 to be exchanged for a new BMS compatible water meter.

Your comments please.

Kind regards Lindsay

Lindsay Oldham
Senior Technical Officer (Water)
Energy Management Unit
Corporate Procurement
Corporate Services Department
Manchester City Council
Town Hall Extension
Level 5
Manchester
M60 2LA

External Tel: 0161-234-3632
Internal Tel: 801-33632
Mobile 07788 978712
e-mail: lindsay.oldham@manchester.gov.uk

From: Anna Lucas <Anna.Lucas@manchester.gov.uk>
Sent: Wednesday, November 6, 2024 10:26 AM
To: Lindsay Oldham <lindsay.oldham@manchester.gov.uk>
Cc: Emma Rubezevicius <emma.rubezevicius@manchester.gov.uk>
Subject: Hammerstone Road - Secondary Water Meter

Hi Linsday

Hope you're good.

I'm getting in touch regarding the proposed pulsed water meter at Hammerstone – we were emailing about this a little while ago. The Contractor, Morgan Sindall, would like to install a secondary pulsed meter downstream of the existing water meter (within the site's boundary). This is so that the amount of water used for the vehicle washdown area can be monitored on the building's BMS system. They are not doing any work to the existing water meter.

To progress this, Morgan Sindall need a Letter of Authority from the Council, so that their subcontractor, Ameon, can get the appropriate permissions from UU to progress the works. Is this something you can provide?

If so, MS has prepared the letter for the Council to sign – please see attached.

Please let me know if you have any questions.

Kind regards
Anna

Anna Lucas

Senior Project Manager
Major Projects, Capital Programmes, Corporate Core Directive

e. anna.lucas@manchester.gov.uk
m. 07747 093 921

Working week: Monday - Thursday

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The following notice applies to emails originating in the UK.

Emails are sent on behalf of the relevant Morgan Sindall company below. Each company is registered in England and Wales each with its registered office at Kent House, 14-17 Market Place, London W1W 8AJ and number as shown: Morgan Sindall Group plc (0521970), Morgan Sindall Construction & Infrastructure Ltd. (04273754), Morgan Sindall Engineering Solutions Limited (04969901), Morgan Sindall Property Services Limited (4515196).

For further information on Morgan Sindall Group plc and its subsidiaries visit our website at www.morgansindall.com

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S106 Part 1 'Application to connect to a public sewer' Approval Notice

United Utilities Reference Number:	**02926533**
Applicant details	
Applicant name	**Andy Losty**
Applicant address *(including postcode)*	**Curtins Consulting** **Merchant Exchange** **17-19 Whitworth Street West** **Manchester** **M1 5WG**
Applicant email	**andy.losty@curtins.com**
Site details: The site / property which is proposed for connection to the public sewer	
Site address *(including postcode)*	**Hammerstone Road Depot** **Manchester** **M18 8EQ**

APPROVED

Your application for connection to the public sewer has been approved, to be made via a new connection:

To a private drain	☒	You may appoint your contractor and advise your appointed building control body (who should inspect the work). United Utilities should be advised when this work is complete.
Direct to the public sewer	☐	**Further action required** You may now appoint an appropriately qualified contractor. Your appointed contractor is responsible for obtaining authorisation to work on a public sewer. (The S106 Part 2 application form **'Request for permission to work on a public sewer'** is available on our website; unitedutilities.com).

Mode of connection approved	**Other - please see comments box**					
Sewer connection type	Foul	☒	Surface water	☐	Combined	☐

This approval is valid for 12 months from the date below.
This approval does not grant access to third party land, permission should be sought if required between applicant and land owner
If the new connection renders access unsafe or is otherwise detrimental to the manhole or sewer, a new/upgraded manhole will be requested.

Comments

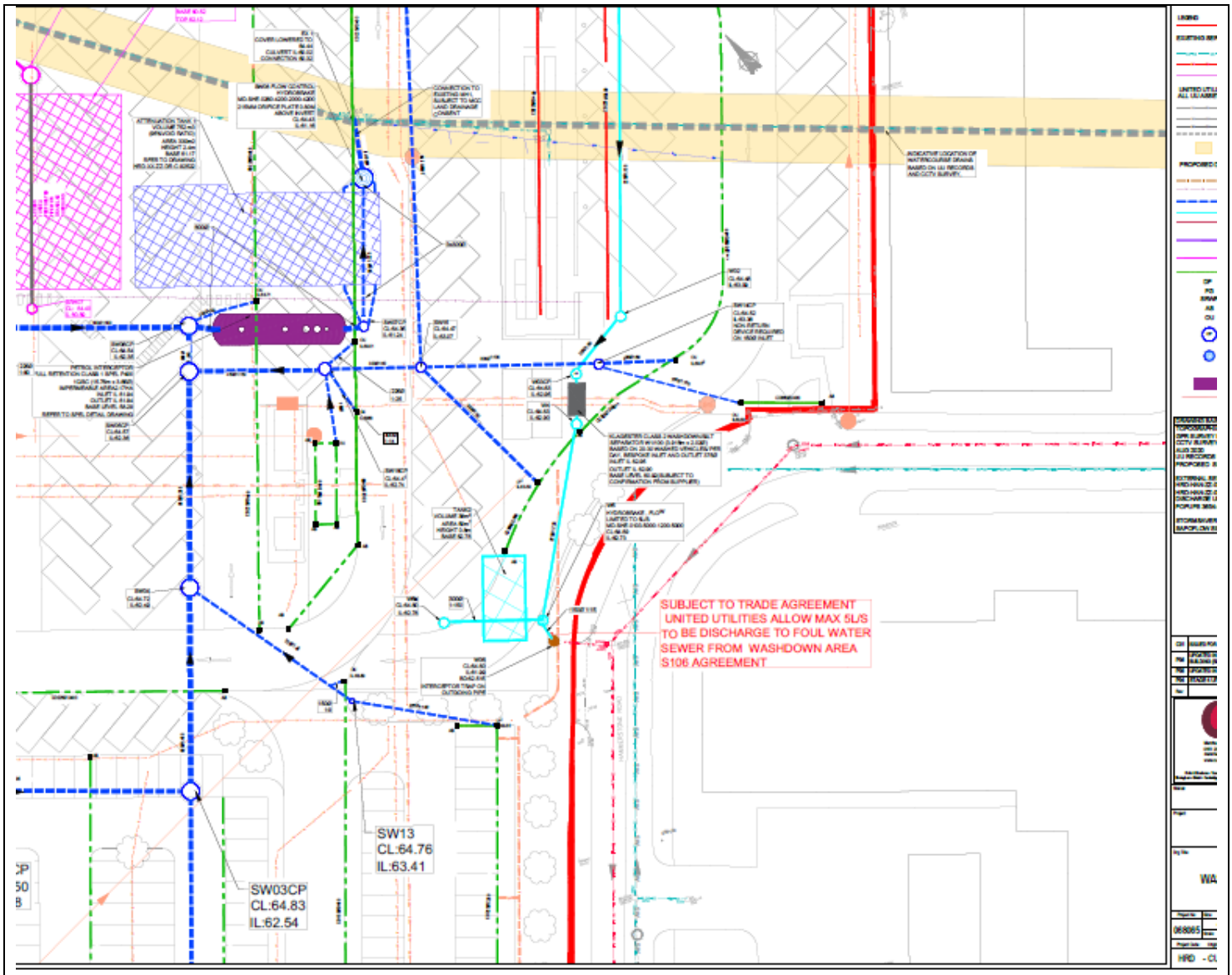
Consent To Discharge of Trade Effluent form received with the application - which indicates The sewer in which the trade effluent may be discharged and the point of discharge is the foul sewer situated at Hammerstone Road (Manhole Ref 2801)

Appproval is for the Washdown area – which has been granted consent from Trade Effluent Team.

Approval granted for the foul connection utilising the existing private drainage which outalls to the 375mm foul sewer in Hammerstone Road. (MH 2801)

For low-lying sites, (where the ground level of the site or the level of a basement is below the ground level at the point where the drainage connects to the public sewer), care should be taken to ensure that the property is not at increased risk of flooding. If these circumstances exist it could affect the detailed design of your site and result in the need to incorporate appropriate mitigating measures in your drainage scheme.

Please note, if you are proposing to connect to an existing, unchartered drain or sewer then it is the developer's responsibility to confirm that it communicates with the Public Sewer.
Connections may be made to private lateral drains or to existing neighbouring drain. A part 1 approval does not give permission to access third party land. The applicant must seek permission from the relevant land owner.



Developer Services Inspector	**Lynne Berry**
Contact number	**07881 034558**
Date	**13/03/2024**

Appendix L

Construction Record Drawings - Lower Ground Drainage

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TABLE 1: PROPOSED CATCHMENTS MAXIMUM FLOW RATES					
CATCHMENT REF	AREA (Ha)	CALCULATION METHOD	FLOW RATE - 1:1 YEAR STORM EVENT	FLOW RATE - 1:30 YEAR STORM EVENT	FLOW RATE - 1:100 YEAR + 40% CC STORM EVENT
CATCHMENT PC (LOWER GROUND CP)	0.332	50% BROWNFIELD OF THE EXISTING 1-YEAR STORM EVENT AREA EC (25%)	7.0	7.0	7.0
REFER TO DRAWINGS HRD-CUR-XX-00-DR-C-92-621 & 622 FOR DETAILS OF EXISTING AND PROPOSED CATCHMENTS					

INFORMATION PROVIDED BY THE CCTV SURVEY DID NOT PROVIDE CONFIRMATION WHERE SOUTH WATERCOURSE IS LOCATED

FOR EXISTING DRAINAGE REFER TO DRAWING NUMBER: HRD-CUR-XX-00-DR-C-92-510

PROPOSED SERVICES SHOULD BE LOCATED OUTSIDE PROPOSED DRAINAGE

CONSTRUCTION RECORD - FINAL CONSTRUCTION

THE INFORMATION IS BASED ON CONFIRMATION FROM THE CONTRACTOR OF THE INSTALLED WORKS. THERE MAY BE VARIATIONS ON SITE WHICH ARE NOT REFLECTED ON THIS DRAWING AND HAS NOT BEEN VERIFIED BY CURTINS.

LEGEND

- SITE BOUNDARY

PROPOSED DRAINAGE

- PROPOSED SURFACE WATER DRAIN
- PRIVATE SURFACE WATER DIVERSION
- Ø225 GATIC CHANNEL C250 (UNLESS NOTED D400)
- CP CATCHPIT
- HB HYDROBRAKE
- BD BACKDROP
- AB ACCESS BOX
- OU OUTLET BOX

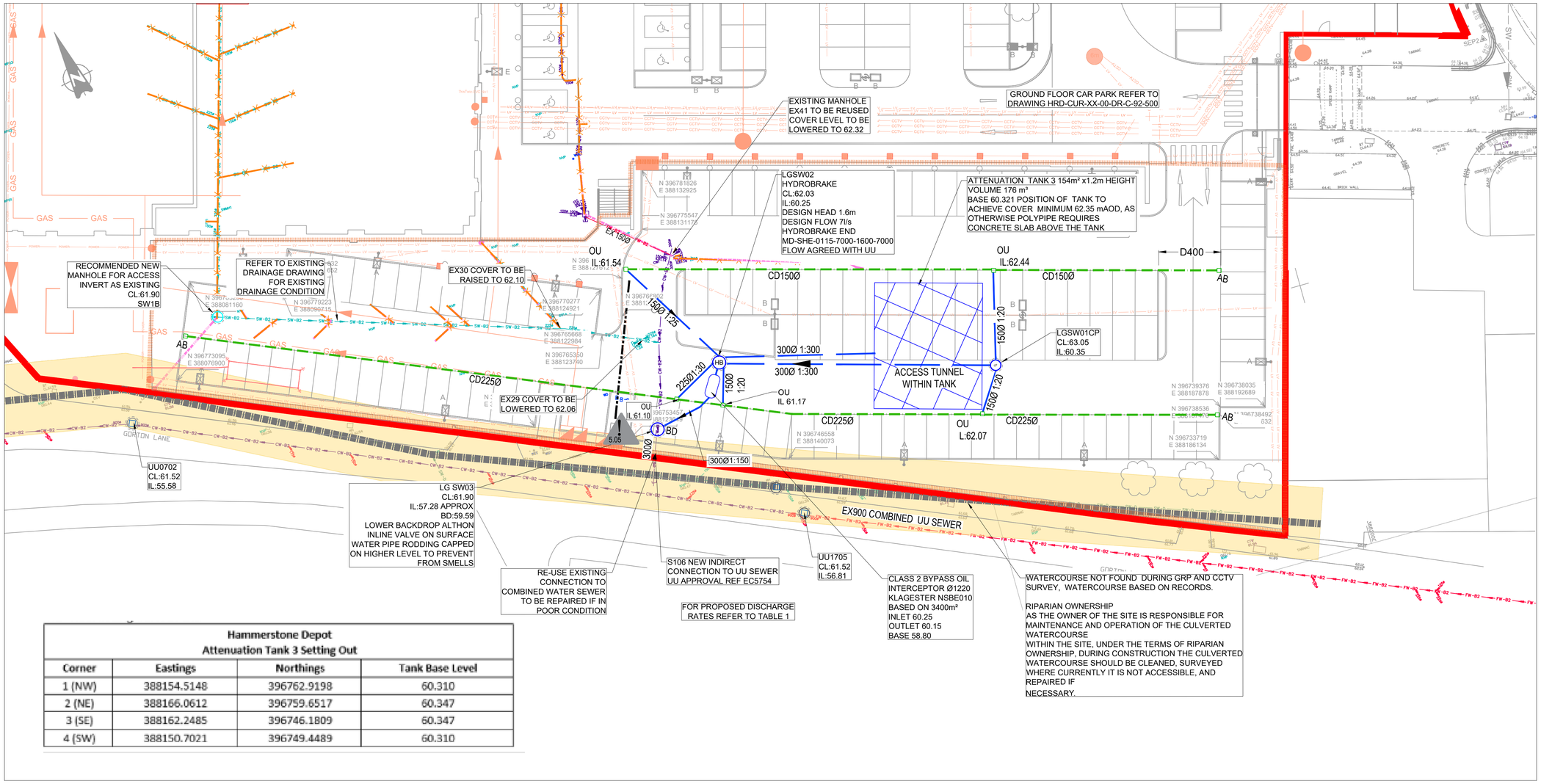
UNITED UTILITIES RECORDS UUPS-ORD-76950 ALL UU ASSETS ARE SHOWN INDICATIVELY

- CW UU FOUL WATER SEWER
- SW UU SURFACE WATER
- SEWER WATERCOURSE
- SW-B2 PRIVATE SURFACE WATER
- FW-B2 PRIVATE FOUL
- CW-B2 PRIVATE COMBINED
- 8M EASEMENT BASED ON SEWER FOR ADOPTION 6TH EDITION
- OIL INTERCEPTOR
- ATTENUATION TANK
- SW PROPOSED SERVICES

GENERAL NOTES:

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTS AND ENGINEERS DRAWINGS AND SPECIFICATIONS.
2. DESIGN BASED ON TOPOGRAPHICAL SURVEY AND CCTV SURVEY INFORMATION AVAILABLE AT THE TIME OF DESIGN. ALL EXISTING SEWERS, CONNECTIONS, PIPE SIZES AND INVERT LEVELS TO BE CONFIRMED BY CONTRACTOR PRIOR TO COMMENCEMENT OF WORKS TO ENSURE CONNECTIVITY. ANY VARIANCE FROM THE INFORMATION SHOWN SHOULD BE REPORTED TO THE ENGINEER FOR REVIEW.
3. DO NOT SCALE THIS DRAWING. ALL DETAILS AND DIMENSIONS ARE TO BE CHECKED BY THE CONTRACTOR. ANY DISCREPANCIES TO BE REPORTED TO THE ENGINEER.
4. ALL DIMENSIONS ARE IN METRES AND LEVELS IN METRES ABOVE ORDNANCE DATUM UNLESS OTHERWISE NOTED.
5. WHERE EXISTING DRAINAGE IS BEING USED, ALLOWANCES SHOULD BE MADE TO REMEDIATE THIS DRAINAGE IN LINE WITH AVAILABLE CCTV SURVEY INFORMATION. IF NO SURVEY IS AVAILABLE, IT IS ADVISED TO OBTAIN ONE PRIOR TO COMMENCEMENT OF WORKS.
6. ALL EXISTING SERVICES TO BE LOCATED PRIOR TO COMMENCEMENT OF ANY DRAINAGE WORKS, AND WHERE NECESSARY PROTECTION OR DIVERSIONS TO BE UNDERTAKEN TO AVOID CONFLICT WITH THE PROPOSED WORK.
7. ALL PIPE DIAMETERS GIVEN ARE NOMINAL INTERNAL PIPE DIAMETERS. THESE ARE TO BE CONFIRMED ONCE A DETAILED CAPACITY CHECK HAS BEEN UNDERTAKEN AT A LATER DESIGN STAGE.
8. OUTFALL CONNECTION(S) SUBJECT TO AGREEMENT WITH THE APPROVING AUTHORITY.
9. FOR FULL DRAINAGE NOTES REFER TO HRD-CUR-XX-ZZ-DR-C-92-502

Lower Ground Surface Water																	
MH REF	CL (mAOD)	IL (mAOD)	DEPTH TO SOFFIT (m)	DS PIPE DIA (mm)	MH DIA (mm)	MH TYPE	CATCHPIT	COVER SIZE (mm)	COVER CLASS	COVER TYPE	RECESSED	RESTRICTED ACCESS	BACK DROP	Back drop IL (mAOD)	COMMENTS	EASTING	NORTHING
Lower Ground Surface Water																	
LGSW01	63.05	60.35	2.55	150	1200	TYPE B	Y	600X600	D400	SINGLE SEALED	N	N	N	N/A	CATCHPIT MIN SUMP DEPTH 300mm	388165.024	396750.481
LGSW02	62.03	60.25	1.48	300	1500	HYDROBRAKE CHAMBER	N	1200X675	D400			N	N	N/A	FLOW CONTROL CHAMBER REFER TO HYDROBRAKE DETAILS FOR SUMP DEPTH	388135.490	396758.968
LGSW03	61.90	57.28	4.32	300	1500	TYPE A2	N	600X600	C250			N	Y	59.59		388126.901	396753.635
SW1B	61.90	60.30	1.38*	225	1500*	TYPE C*	N	1200X675*	D400			N	N		MANHOLE TO BE CONSTRUCTED ON EXISTING DRAIN. *INVERT LEVEL INTERPOLATED FROM CCTV SURVEY - TBC ON SITE	388083.112	396778.715
EX29	62.06	EXISTING MANHOLE COVER ADJUSTED TO SUIT PROPOSED LEVELS						600X600	C250			N	N	N/A		388127.742	396763.677
EX30	62.10							600X600	C250			N	N	N/A		388119.157	396767.106
EX41	62.32							600X600	C250			N	N	N/A		388133.251	396771.833



Hammerstone Depot Attenuation Tank 3 Setting Out			
Corner	Eastings	Northings	Tank Base Level
1 (NW)	388154.5148	396762.9198	60.310
2 (NE)	388166.0612	396759.6517	60.347
3 (SE)	388162.2485	396746.1809	60.347
4 (SW)	388150.7021	396749.4489	60.310

DRAWING BASED ON:
TOPOGRAPHICAL SURVEY BY SEP S15724-T
GPR SURVEY BY SEP S17480-U DEC 2018 JUNE 2018
CCTV SURVEY BY SEP DRAINAGE SURVEYS LTD DEC 2018 AND AUG 2020
UU RECORDS UUPS-ORD-76950

PROPOSED SITE PLAN GA
HRD-FRA-00-XX-SK-A-90-9006 REV C02

SIPHONIC DRAINAGE
STORMSAVER 05.07.22
SAPOFLOW SIPHON SYSTEM 29.06.22

Rev:	Description:	Date:	By:	Chkd:
C07	CONSTRUCTION RECORD ISSUE	28.05.24	ATL	ATL
C06	LG SW03 AMENDED IN LINE WITH ON SITE INFORMATION	14.07.23	ATL	ATL
C05	LG SW03 MOVED FOLLOWING ADDITIONAL SURVEY	3.07.23	MW	MW
C04	ATTENUATION TANK AMENDED TO SUIT REVISED REQUIREMENTS	27.06.23	ATL	MW
C03	TANK RELOCATED TO ACHIEVE COVER RECOMMENDED BY POLYPIPE	24.10.22	MW	MW
C02	OIL INTERCEPTOR BASED ADDED	19.08.22	MW	MW
C01	CONSTRUCTION ISSUE	22.07.22	ATL	MW
P08	DRAINAGE NOTE ADDED	25.04.22	ATL	MW
P07	MAIN BUILDING DRAINAGE AMENDED	25.03.22	ATL	MW
P06	STAGE 4 UPDATED	05/08/21	MW	MW
P05	ISSUED FOR STAGE 4	09/04/21	MW	MW
P04	UPDATED TO COMMENTS FOR COSTING	23/03/21	MW	MW
P03	ISSUED FO STAGE 3- UPDATED SITE PLAN	02/12/20	MW	MW
P02	ISSUED FOR STAGE 3	18/11/20	MW	MW
P01	ISSUED FOR STAGE 3	29.01.19	MW	CG

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Status: CR - CONSTRUCTION RECORD

Project: HAMMERSTONE ROAD

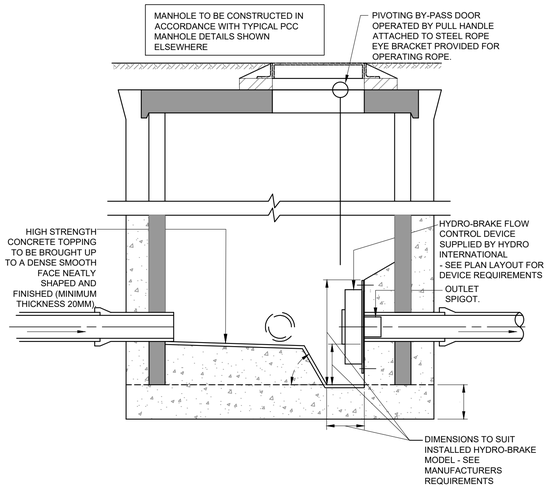
Drg Title: PROPOSED LOWER FLOOR DRAINAGE

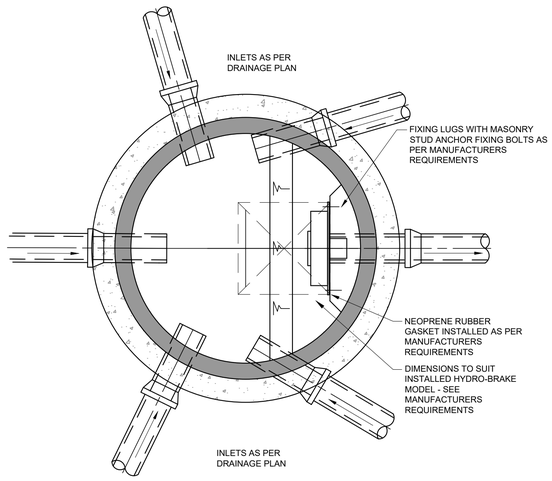
Project No:	Size:	Date:	Drawn By:	Designed By:	Checked By:
068065	A1	29.01.19	MW	MW	CG
	Scale: 1:250				

Project Code: Originator: Zone: Level: Type: Discipline: Category / Number: Rev:

HRD - CUR - XX - 00 - DR - C - 92-501 - C07

\\ma-fs-1\Projects\068065 - 065000\068065 - Hammerstone Road Depot\2MS 4 Production\4B Models & Drawings_Civil-C\CAD\92\





TYPICAL FLOW CONTROL MANHOLE
(HYDRO-BRAKE)

LOWER CAR PARK MANHOLE LGSW03 MD-SHE-0115-7000-1600-7000

LOWER GROUND FLOOR LGSW03 MD-SHE-0115-7000-1600-7000

Technical Specification

Control Point	Head (m)	Flow (l/s)
Primary Design	1.600	7.000
Flush-Flo™	0.476	6.980
Kick-Flo®	0.977	5.558
Mean Flow		6.128

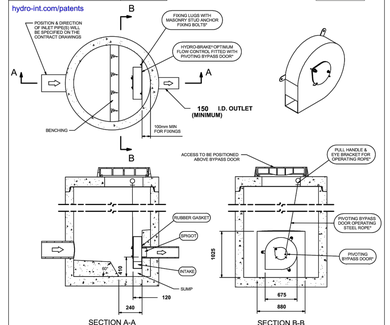
Hydro-Brake® Optimum Flow Control including:

- 3 mm grade 304L stainless steel
- Integral stainless steel pivoting by-pass door allowing clear line of sight through to invert, stainless steel operating rope
- Bead blasted finish to maximise corrosion resistance
- Stainless steel fixings
- Rubber gasket to seal outlet

BBA APPROVED CERTIFICATE No 092/4295

WRc Approved PT329/0412

hydro-int.com/patents



IMPORTANT: LIMIT OF HYDRO INTERNATIONAL SUPPLY
THE DEVICE WILL BE HANDED TO SUIT SITE CONDITIONS
* FOR DETAILS OF THE CONTROL DEVICE APPROPRIATE TO YOUR RUBBER SIZE REFER TO HYDRO INTERNATIONAL
ALL CIVIL AND INSTALLATION WORK BY OTHERS
* WHERE SUPPLIED
HYDRO-BRAKE® FLOW CONTROL & HYDRO-BRAKE® OPTIMUM FLOW CONTROL ARE REGISTERED TRADEMARKS FOR FLOW CONTROLS DESIGNED AND MANUFACTURED EXCLUSIVELY BY HYDRO INTERNATIONAL

THIS DESIGN LAYOUT IS FOR ILLUSTRATIVE PURPOSES ONLY. NOT TO SCALE.

DESIGN ADVICE	The head/flow characteristics of this SHE-0115-7000-1600-7000 Hydro-Brake Optimum® Flow Control are unique. Dynamic hydraulic modelling evaluates the full head/flow characteristic curve. **The use of any other flow control will invalidate any design based on this data and could constitute a flood risk.**
DATE	8/5/2021 2:39 PM
SITE	Hammerstone depot
DESIGNER	Marta Jarzembowska
REF	068065

Hydro International

SHE-0115-7000-1600-7000

Hydro-Brake® Optimum

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marta.jarzembowska@curtins.com

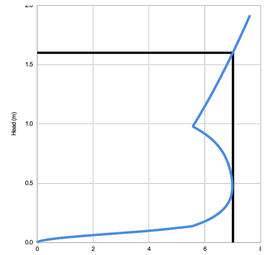
Technical Specification

Control Point	Head (m)	Flow (l/s)
Primary Design	1.600	7.000
Flush-Flo	0.476	6.980
Kick-Flo®	0.977	5.558
Mean Flow		6.128

BBA APPROVED INSPECTION TESTING CERTIFICATION CERTIFICATE No 092/4295

WRc APPROVED PT329/0412

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Head (m)	Flow (l/s)
0.000	0.000
0.055	1.591
0.110	4.484
0.166	5.861
0.221	6.332
0.276	6.635
0.331	6.821
0.386	6.926
0.441	6.972
0.497	6.977
0.552	6.953
0.607	6.904
0.662	6.833
0.717	6.736
0.772	6.605
0.828	6.425
0.883	6.183
0.938	5.859
0.993	5.600
1.048	5.742
1.103	5.881
1.159	6.016
1.214	6.147
1.269	6.276
1.324	6.402
1.379	6.525
1.434	6.646
1.490	6.764
1.545	6.880
1.600	6.994

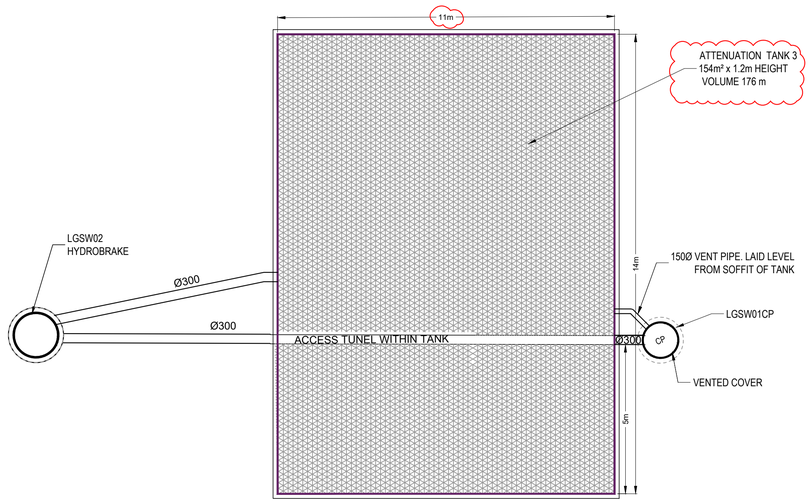
DESIGN ADVICE	The head/flow characteristics of this SHE-0115-7000-1600-7000 Hydro-Brake Optimum® Flow Control are unique. Dynamic hydraulic modelling evaluates the full head/flow characteristic curve. **The use of any other flow control will invalidate any design based on this data and could constitute a flood risk.**
DATE	05/08/2021 14:39
Site	Hammerstone depot
DESIGNER	Marta Jarzembowska
Ref	068065

Hydro International

SHE-0115-7000-1600-7000

Hydro-Brake Optimum®

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ATTENUATION TANK 3
PLAN

ATTENUATION TANK 3
3 x 400mm LAYERS OF POLYSTORM PSM1/ POLYSTORM INSPECT PSM4 (400mm DEEP)
BASED ON APPROXIMATE MINIMUM BURIAL DERTH OF 2.81m.

TANK IS LOCATED IN AN AREA SUBJECT TO LIGHT VEHICULAR LOADING (MAX 7T)

THE MANUFACTURER WILL NEED TO CONFIRM THAT THE TANK HAS SUFFICIENT STRENGTH FOR THIS LOCATION IN ACCORDANCE WITH CIRIA C680.

MINIMUM GROUND LEVEL IS APPROX. 62.447 (MIN 0.937m COVER).
MAXIMUM GROUND LEVEL IS APPROX. 63.152 (MIN 1.605M COVER).

INVERT LEVEL OF INLET PIPE 60.347
INVERT LEVEL OF OUTLET PIPE 60.310
BASE OF TANK TO BE LAID AT 1:300 FALL.

DIMENSIONS OF TOTAL UNIT ARE 14m X 11m.
TOTAL DEPTH OF TANK IS 1200mm.
ATTENUATION VOLUME, BASED ON 95% VOID RATIO IS 176m³

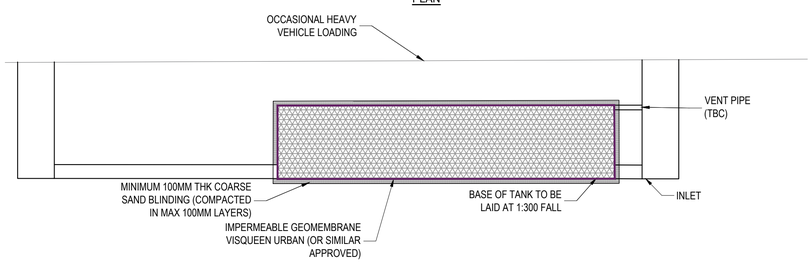
TANK TO BE WRAPPED IN IMPERMEABLE MEMBRANE AND THE MEMBRANE SHOULD BE LAPPED BY A MINIMUM OF 300mm.

TANK TO BE BED AND SURROUND IN MINIMUM OF 100mm LAYER OF COMPACTED COARSE SAND OR CLASS 6H SELECTED GRANULAR MATERIAL. REQUIREMENT FOR CONCRETE SURROUND OR PROTECTION TO BE CONFIRMED WITH THE MANUFACTURER.

HIGH GROUNDWATER LEVEL ESTIMATED AT 60.44 BASED ON SITE INVESTIGATION (CP01). INITIAL FLOATTATION CALCULATIONS INDICATE THAT THE TANK IS NOT AT RISK OF FLOATATION. HOWEVER, THE MAUFACTURER SHOULD PROVIDE CALCULATIONS TO CONFIRM THIS.

(IF AN ALTERNATIVE MANUFACTURER IS USED, THESE REQUIREMENTS SHOULD BE IN LINE WITH THEIR REQUIREMENTS)

REFER TO DRAINAGE LAYOUT HRD-CUR-XX-00-DR-C-92501



SECTION THROUGH
ATTENUATION TANK

GENERAL NOTES:

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTS AND ENGINEERS DRAWINGS AND SPECIFICATIONS.
2. DO NOT SCALE THIS DRAWING. ANY AMBIGUITIES, OMISSIONS AND ERRORS ON DRAWINGS SHALL BE BROUGHT TO THE ENGINEER,S ATTENTION IMMEDIATELY. ALL DIMENSIONS MUST BE CHECKED / VERIFIED ON SITE.
3. ALL DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE.
9. REFER TO DRAINAGE LAYOUT HRD-CUR-XX-00-DR-C-92-501 FOR THE LOCATION OF THE ATTENUATION TANK.
10. ATTENUATION TANK TO BE INSTALLED STRICTLY IN ACCORDANCE WITH THE MANUFACTURER'S REQUIREMENTS.
11. WHERE AN ALTERNATIVE ATTENUATION TANK DEVICE IS PREFERRED, IT WILL BE SUBJECT TO REDESIGN TO CONFIRM WHETHER THE SYSTEM HAS CAPACITY.
12. THE DESIGN OF THE TANK SHOULD BE PROVIDED BY THE MANUFACTURER OR SUPPLIER TO ENSURE THE TANK IS SUFFICIENT FOR THE SITE SPECIFIC CRITERIA.
13. THE TANK DESIGN SHOULD INCORPORATE:
    - CRATES SUBJECT TO OCCASIONAL HEAVY VEHICLE LOADING
    - SUITABLE MAINTENANCE ACCESS; AND
    - VENTING TO PREVENT TRAPPED AIR POCKETS.
12. THE STRENGTH OF THE TANK SHOULD COMPLY WITH CIRIA C680 STRUCTURAL DESIGN OF MODULAR GEOCELLULAR DRAINAGE TANKS.
13. ACCESS FOR MAINTENANCE SHOULD BE IN ACCORDANCE WITH CIRIA GUIDANCE.
14. VENTING TO THE TANK SHOULD BE CONFIRMED BY THE TANK MANUFACTURER. VENTING SHOULD BE LOCATED WITHIN LANDSCAPED AREAS, OR ROUTED BACK TO THE NEAREST MANHOLE ABOVE THE DESIGN WATER LEVEL.
15. CONSTRUCTION AND INSTALLATION OF THE TANK SHOULD BE STRICTLY IN ACCORDANCE WITH THE MANUFACTURER'S INSTALLATION REQUIREMENTS.
16. THE CURRENT DESIGN OF THE TANK IS BASED ON USE OF POLYPIPE POLYSTORM MODULES, TO ALLOW AN ASSUMPTION OF UNIT SIZES WITHIN THE OVERALL DESIGN. HOWEVER, WHERE AN ALTERNATIVE SYSTEM IS PROPOSED, THE DIMENSIONS OF THE UNITS WILL NEED TO BE CHECKED WITHIN THE DESIGN AND MAY RESULT IN A REDESIGN.
17. THE CONTRACTOR SHALL PROHIBIT THE MOVEMENT OF CONSTRUCTION PLANT ACROSS THE STORAGE TANK AND WHERE NECESSARY PROVIDE ADDITIONAL SUPPORT AND PROTECTION TO THE STRUCTURE. PARTICULARLY POST CONSTRUCTION. TEMPORARY FENCING CAN BE USED TO PROHIBIT TRADE STOCKS, PILLING MATERIALS, HEAVY PLANTS ETC.
18. FLOW CONTROL TO BE INSTALLED IN STRICT ACCORDANCE WITH THE MANUFACTURERS REQUIREMENTS, INSTRUCTIONS AND RECOMMENDATIONS.
19. WHERE AN ALTERNATIVE FLOW CONTROL DEVICE IS PREFERRED, IT WILL BE SUBJECT TO REDESIGN TO CONFIRM WHETHER THE SYSTEM HAS CAPACITY.

Rev:	Description:	Date:	By:	Chkd:
C03	TANK SIZE UPDATED	27.06.23	ATL	MW
C02	TANK ROTATED AND INVERT UPDATED	24.10.22	MW	MW
C01	CONSTRUCTION ISSUE	20/07/22	ATL	MW

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Status: STAGE 5

Project: HAMMERSTONE ROAD DEPOT

Drg Title: DRAINAGE DETAILS
SHEET 5

Project No:	Size:	Date:	Drawn By:	Designed By:	Checked By:
068065	A1	20/07/22	MW	MW	MW
	Scale: 1:20				

Project Code:	Originator:	Zone:	Level:	Type:	Discipline:	Category / Number:	Rev:
HRD	- CUR	- XX	- ZZ	- DR	- C	- 92-524	-C03

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